FLIGHT

MAGAZINE

SEPTEMBER 1958
50 cents

TECHNOLOGY DEPT.
V.47 #9

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DETROIT

GRUMMAN GULFSTREAM

Lockheed Aircraft Corporation, in co-operation with Shell, developed *new fuel techniques* to speed the servicing of the *Electra*.

Short stop for first U. S. Prop-Jet

LOCKHEED'S NEW ELECTRA . . . first U. S. prop-jet airliner . . . has such advanced design features that ground service time has been cut to only 12 minutes.

AeroShell Turbine Fuel, used extensively by prop-jet aircraft flying in the U. S. today, was selected for the proving flights of the *Electra*.

Shell trucks, specially designed to service this new airliner, deliver over 300 gallons of AeroShell Turbine Fuel a minute. Fuel is pumped aboard into all four wing tanks *simultaneously* through a new Lockheed single-point fueling system.

Shell's research in aviation aircraft fuels has always kept pace with aircraft development. Perhaps this is why the Shell fuel truck is such a familiar sight at airports everywhere.

WRITE FOR FREE LEAFLET

"FUELING THE ELECTRA"

This step-by-step picture story shows how single-point fueling works.

SHELL OIL COMPANY

50 WEST 50th STREET, NEW YORK 20, N. Y.
100 BUSH STREET, SAN FRANCISCO 6, CALIF.

SHELL

THIS SIGN

a sight on an airfield as familiar as a wind sock!

It's a fact that a corporate or private aircraft operator would have difficulty making a day's cross-country flight without encountering the Goodyear "Sign of Service."

For it is the sign of the largest and most complete service network serving civil aviation in the land.

Each one of these signs marks the headquarters of an airport service center that is backed by the most reliable stock of top-quality aircraft parts and accessories – *and manned by men who have built a long-standing reputation for fair play and expert workmanship.*

It's a welcomed sight, this "Sign of Service" –the one more flying consumers rely on than any other!

Reason? Reliability, parts availability, dependability.

It's that simple. That's what a great reputation is built upon!

Wherever you fly, whenever you need a small part or a complete overhaul–taxi over to the "Sign of Service." You can rely on the people who put it there.

Goodyear Aviation Products Distributors

AIR-PARTS INTERNATIONAL *Burbank, Cal.–New York, N. Y.*

PIEDMONT AVIATION, INC.
Winston-Salem, N. C.–Norfolk, Va.

VAN DUSEN AIRCRAFT SUPPLIES *Minneapolis, Minn.*
Eastern Boston, Mass.–Miami, Fla.–Teterboro, N. J.
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GENERAL AVIATION SUPPLY COMPANY *Houston, Tex.*
Phoenix, Ariz.–Dallas, Tex.–Oklahoma City, Okla.
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Stapleton Airfield, Denver, Colo.

THE DON HORN COMPANY
Municipal Airport, Memphis, Tenn.

ATLANTIC AVIATION SERVICE, INC.
Box 1709, Wilmington, Delaware

STANDARD AIRCRAFT EQUIPMENT COMPANY, INC.
P.O. Box 271, Mineola, Long Island, N. Y.

High Plains Haven For Southwestern Air Travelers

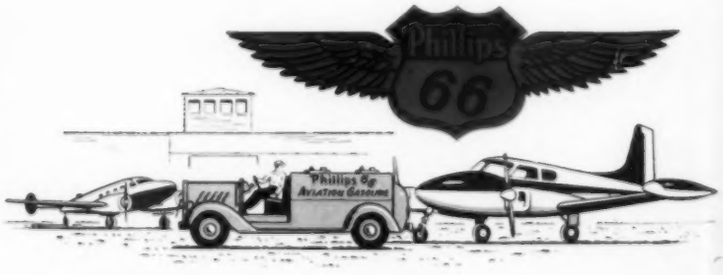
Shelby M. Kritser, president *(right)* and Robert E. (Bob) Siler, secretary and general manager of Tradewind Airport, Amarillo, Tex.

Tradewind's facilities include 4 large hangars and 30 T-Hangars which will accommodate 120 planes.

Tradewind Airport, in the heart of the famed "Golden Spread" of West Texas, has become a symbol of service to Southwestern air travelers.

Winner of the coveted Haire Airport Award and repeatedly adjudged superior by the AOPA, Tradewind extends service to both private and executive aircraft. It offers an approved radio shop, charter flights, Beechcraft Certified Service, flight instruction and 24-hour line service. Equipped with 4,000-ft. hard surface runways, it is just 5 minutes from downtown Amarillo.

Tradewind, a Beechcraft Distributor, has sold Phillips *66* Aviation Gasoline exclusively since the airport was opened in 1946. Bob Siler, general manager, reports: "We are primarily selling service. We offer our customers all the niceties of a crack service station. That's why we gas their planes with Phillips *66* Aviation Gasoline. We've never had a customer complaint during the 12 years we've sold Phillips gasoline."



AVIATION DIVISION • PHILLIPS PETROLEUM COMPANY • BARTLESVILLE, OKLAHOMA

AIR Report
Significant Trends and News

SUPER-V BONANZA twin-engine conversion has been acquired by Oakland Airmotive, Oakland International Airport, from Dave Peterson of Tulsa, who has joined Oakland Airmotive and will direct that firm's production and manufacture of a CAA-approved version of the conversion with a planned package price of $15,995 for the conversion of a Bonanza to a Super-V light twin which will cover essential work with optional deluxe versions. Regional distributorships are planned, with complete kits available for Bonanza conversion in less than one week of down-time. The Super-V will use two fuel-injection 4-cylinder, Lycoming O-340 engines rated at 170 hp. each with carburetor but believed to be capable of more power with Simmonds fuel injection system. Props will be full-feathering Hartzells. Engine cowlings are said to be only 14 inches deep, do not use flaps for cooling. Standard fuel supply will be 108 gals. with integral tanks for range of more than 1,400 miles at 175-mph. economy cruise. Peterson's Super-V prototype is said to cruise over 200 mph. with phenomenal rate of climb and 11,000-ft. single-engine ceiling. Two prototype Super-V's have been flying for more than a year and are now at Oakland Airmotive, which has completed tooling, dies, jigs and fixtures in preparation for production following accelerated CAA licensing. E. H. Gough, president of Oakland Airmotive, announced the Super-V program.

SOLUTION TO COUPLED ENGINE CONFIGURATION, with two engines driving single propeller through free-wheeling clutch so that either engine may be used or both, is offered by de Havilland Engine Co. of England in its development of a new 1,000-shp. Gnome turboprop, available in both single and coupled forms. In coupled unit, two Gnomes drive direct into a gearbox which couples the drives through a free-wheel clutch. A single, offset shaft runs parallel to the engine main shafts and transmits power to a forward housing and propeller shaft assembly. Single Gnome has 525-lb. dry weight with specific fuel consumption of 0.67 lb./hr./shp.

MOONEY MARK 20 ROUND-THE-WORLD RECORD ATTEMPT was scheduled to be made during September by George Williams of Mexico City, sponsored by Mooney Aircraft with Lycoming-powered Mark 20 loaded to 3,850 lbs., 1,400 lbs. over normal gross weight and carrying 32 gals. of fuel. Stops after take-off from New York would be Rome, Bombay, Singapore, Tokyo, Mexico City, New York, with total of 22,925 miles being first round-the-world flight under FAI rules for mileage equal or exceeding measurement around the Tropic of Cancer. New nonstop distance record for Class 3 aircraft would be made from Tokyo to San Francisco with Williams hoping to continue on to Mexico City nonstop from Tokyo, a total of 7,030 miles for the leg. Tip tanks and cabin tanks are being used. Schedule calls for 150-mph. average ground speed, with 8 days to 2 weeks for completion of trip.

MOONEY MARK 20B WITH 250-HP. LYCOMING ENGINE is being readied for delivery in the latter half of 1959. It will have 1,150-lb. useful load at 2,750-lb. gross weight, 200-mph. cruising speed with 1,000-mile range at 175 mph. and price of less than $18,000. . . . **MOONEY AIRCRAFT SALES THIS YEAR ALMOST DOUBLE THOSE FOR 1957** are expected to be reported at end of fiscal year on Oct. 31 when year's billings may total $1,900,000 as compared to $1,042,000 for 1957.

NEW MILITARY TWIN AT BEECH FACTORY was reported by a visitor who saw it last month while taxiing out for take-off. Resembled enlarged Twin-Bonanza with round fuselage having door behind wing trailing edge and high off ground.

FLIGHT MAGAZINE

SEPTEMBER, 1958 VOL. 47, No. 9

THIS MONTH'S COVER is a portrait of the new propjet Grumman Gulfstream executive transport on its first flight last month on August 14. With two 2,015-eshp. Rolls Royce RDa 7/2 turboprop engines, the 10-19-passenger pressurized-air conditioned Gulfstream has a maximum cruise speed of 370 mph. at 25,000 ft. and a range of 2,200 miles plus a reserve of 200 miles and 45 mins. fuel. First deliveries are scheduled for 1959 following CAA certification under Part 4b, with 27 orders on hand and more being accepted for 1959 by four Grumman distributors — Southwest Airmotive, Dallas; Pacific Airmotive, Burbank; Atlantic Aviation, Wilmington, and Timmins Aviation, Montreal.

Air Report—SIGNIFICANT TRENDS AND NEWS 5

Just Among Ourselves—EDITORIALS: RECORDS FOR BOLING; OUR NEW FEDERAL AVIATION AGENCY; JUST ANOTHER RUMOR; YOU NEVER CAN TELL 17

New Lightweight Lear Navcom System—ADVANCED FEATURES FOR SMALL-DIMENSION COMMUNICATIONS AND NAVIGATION UNITS 24

Success for Young Crop Plane Builder—BY TOM ASHLEY—LELAND SNOW HAS 40 ORDERS WHILE TOWN BUILDS HIM A FACTORY 27

Chicken A La Wing—BY GEORGE E. HADDAWAY—LIGHTPLANES MAKE POSSIBLE A BOOMING BUSINESS IN BABY CHICKS 28

PacAero's Speed-Safety Kit—LATEST MODIFICATION PACKAGE FOR IMPROVED BEECH TWIN PERFORMANCE 30

Smallest Twin Ready for First Hop—MOONEY'S FOUR-PLACE MODEL 22 32

Wilcox System in Travel Air—CANARI PACKAGE FOR AIRLINE UNITS 33

New Dare ADF and Radio Combinations—CRYSTAL CONTROLS AND TRANSISTORS FEATURE QUALITY EQUIPMENT 36

Kaman to Sell British VTOL Airliner in U. S.—TURBINES AND TIP-BURNERS FOR SHORT-HAUL TRANSPORT 40

Big-Game Fly-In—FABULOUS HUNTING FOR FLYING SPORTSMEN IN ALASKA 42

Pat Boling's Trans-Pacific Bonanza Hop—HOW IT WAS DONE AND WHAT IT MEANS 50

New Business in the Hangar—NATIONWIDE ROUNDUP OF INTERESTING DEVELOPMENTS IN BUSINESS FLYING 56

Airmen's Calendar—COMING EVENTS 61

GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager; LOUISE ROBERTSON, Circulation; E. H. PICKERING, Consultant; P. O. Box 750 (2700 N. Haskell Ave.), Dallas, Texas — Telephone TAylor 3-6191.

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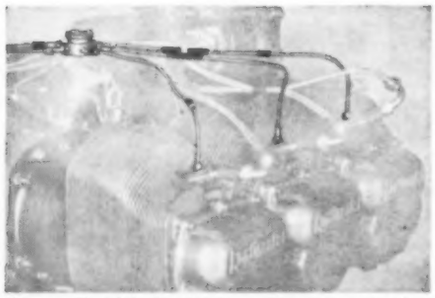
Copyright, 1958, by Air Review Publishing Corporation.

The only single-engine business plane so strong it's licensed in the Utility category at full gross weight. Payload with full tanks, 830 lbs.

Your Beechcraft dealer or distributor invites you to . . .

Fly The Bonanza Yourself and Discover Advantages No Picture Can Show:



New: Fuel injection, a Bonanza exclusive, gives more speed, easier starting in all temperatures, ends carburetor icing.

6 large tinted glass windows, plus low-wing design, gives you unexcelled visibility, even in tight-pattern turns.

You're cleared for take-off. You open the throttle of the 1958 Beechcraft Bonanza. You streak down the runway! You're airborne, fast! Even on a calm day, the '58 Bonanza needs just 940 feet to clear a 50-foot obstacle.

Flip the landing gear switch. The tricycle gear tucks itself away in just 10½ seconds. You climb at a steady 1,250 feet per minute!

You level off, far below the Bonanza's service ceiling of 21,300 feet. Soon you're cruising at 200 —faster than any other single-engine commercial airplane!

You could travel 1,060 miles nonstop, and on less fuel than the family car would need. But today you circle back to the pattern.

You make the easiest landing of your life—almost effortless—even in crosswinds. Short, too. A Beechcraft Bonanza lands in only 1,130 feet over a 50-foot obstacle, with no wind.

Of course, we can't tell you the whole story of what it's like to fly a Bonanza. So why not see your Beechcraft distributor or dealer this month? Accept his offer to fly the 1958 Bonanza *yourself!*

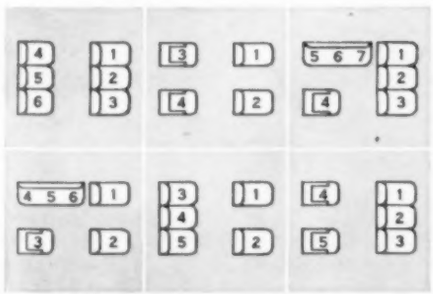
For information about the **Bonanza** and the finest leasing and financing plans in aviation, see your Beechcraft distributor or dealer, or write Beech Aircraft Corporation, Wichita 1, Kansas, U. S. A.

Beechcraft

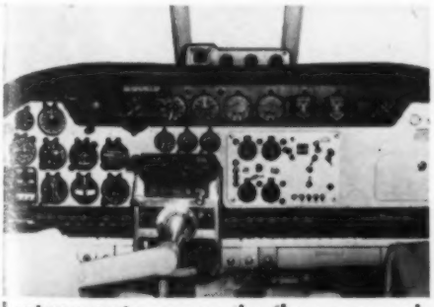
BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Be our guest and fly this 4-mile-a-minute Twin-Bonanza *yourself!*

We Invite 200 More Executive Pilots To Fly The Beechcraft Twin-Bonanza This Month:



Six seating arrangements, for 4 to 7 persons, lets your company choose the one that fits its travel needs best.



Instruments conveniently grouped and edge-lighted, lots of room for radios, makes Twin-Bonanza flying easy.

Get to know the Twin-Bonanza *personally*—yourself! See why all the wonderful things you have heard about this airplane are true.

Open the throttles. Notice the thrust of acceleration! Trim it for climb. Feel the push on your back at 1,600 feet per minute up. You'll discover the Beechcraft Twin-Bonanza offers more advantages than any other twin in its class:

1. **Fly with more power.** The two 340 h.p. supercharged engines lift you off the runway in 940 feet!

2. **Fly faster.** At 70% power it trues out at 228 mph.

3. **Fly farther.** You could travel up to 1,650 miles, non-stop.

4. **Fly higher.** No problems with weather or mountains—your service ceiling is 24,800 feet.

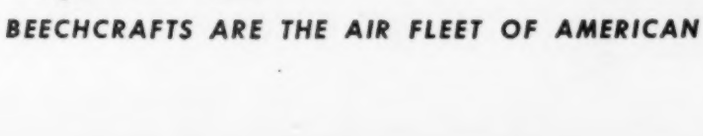
5. **Fly safer.** It's the only airplane in its class designed and tested for an 8G load factor.

But why just *read* about it when you can *fly* the Twin-Bonanza? Like other executive pilots, you'll discover this all-weather airplane offers many *more* advantages. Call your Beechcraft distributor or dealer for an appointment, soon.

For information about the **Twin-Bonanza** and the finest leasing and financing plans in aviation, see your Beechcraft distributor or dealer, or write Beech Aircraft Corporation, Wichita 1, Kansas, U. S. A.

Beechcraft

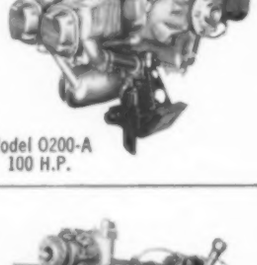
SUPER 18 TWIN-BONANZA BONANZA TRAVEL AIR



BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

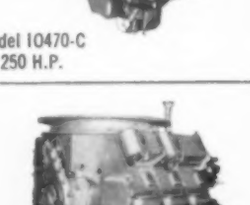
CONTINENTAL AIRCRAFT ENGINES

...FIRST CHOICE FOR UTILITY PLANES



Model O200-A
100 H.P.

Model GO300-A
175 H.P.



Model IO470-C
250 H.P.

Model FSO526-A
270 H.P. (Helicopter)

Model GSO526-A
340 H.P.

WHEN CHOOSING AN AIRPLANE, FOR BUSINESS OR PERSONAL USE, MAKE SURE IT HAS A CONTINENTAL ENGINE—PILOTS' UNDISPUTED FIRST CHOICE. BACKED BY ESTABLISHED PARTS AND SERVICE FACILITIES ALL OVER THE WORLD

MODEL	HP	RPM	CYL.	WT.	OCTANE
A65	65	2300	4	173	80/87
C90	95	2625	4	207	80/87
O200-A	100	2750	4	190	80/87
O300-A & B (C145)	145	2700	6	277	80/87
GO300-A	175	3200	6	312	80/87
E225	225	2650	6	363	80/87
O470-K & L	230	2600	6	404	80/87
O470-M	240	2600	6	409	91/96
O470-G	240	2600	6	432	91/96
O470-H*	240	2600	6	472	91/96
IO470-C	250	2600	6	432	91/96
FSO526-A**	270	3200	6	575	91/96
GSO526-A	340	3100	6	549	91/96

*Pusher Type engine with extended propeller shaft
**Helicopter engine

CONTINENTAL
IS ON THE MOVE IN 1958

Continental Motors Corporation
AIRCRAFT ENGINE DIVISION
MUSKEGON • MICHIGAN

MAJOR BREAKTHROUGH IN CHEMICAL ROCKET FUEL has been achieved by Bell Aircraft, which has succeeded with large-scale test-firings using elemental liquid fluorine, most powerful of all oxidizing agents. It makes possible payload increases up to 70%. Liquid fluorine, which must be kept at 306 deg. below zero F., combines with water to produce combustion temperature of 5,000 deg.

AIR FORCE ASSOCIATION CONVENTION AND AIR POWER PANORAMA in Dallas Sept. 25-26 will be stage for first public unveiling of the Atlas intercontinental ballistic missile.

NEW CESSNA AIRCRAFT COMPANY BRANCH OFFICE AND WAREHOUSE, a $100,000, 8,700-sq. ft. hangar and office, is being built at the Morristown (N. J.) Municipal Airport and will be staffed by Charles Porter, assisted by John Harris, regional sales manager, and Robert Gallant, regional service manager. Complete line of Cessna demonstrators will be maintained there, as well as parts and supply inventory.

NEW TRI-TURBINE CARGO HELICOPTER flying crane has been developed by McDonald Aircraft at St. Louis. Known as Model 120, it has a useful load 62% of its gross weight of 6,300 lbs., with a 2,400-lb. empty weight and can carry a 2,000-lb. payload 80 nautical miles. Compressed air from three small AiResearch GTC-85-35 gas turbines and fuel are piped to pressure jet burners at the tips of three rotor blades, thrust from these three tip jets propelling the rotor, which has no power shafting, gear box or clutch. One-engine-out performance at gross weight is provided by the tri-turbine power package.

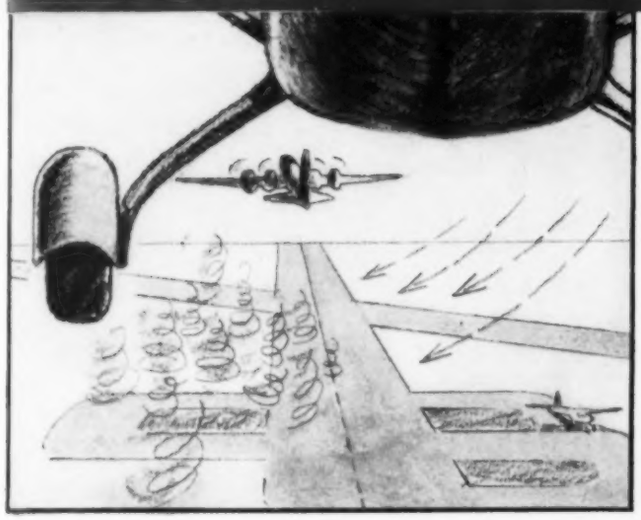
LOCKHEED ELECTRA PROPJET AIRLINER was CAA certificated for airline service last month at 113,000-lb. maximum take-off gross weight for runways as short as 4,730 ft. Maximum landing weight is 95,650 lbs. Later certification at 116,000 lbs. is planned. . . . **PROVISIONAL CAA CERTIFICATION** has been issued for the Boeing 707-120 jet airliner, with full certification expected shortly. Pan American Airways received its first 707 delivery for immediate operation of revenue cargo flights between New York and Puerto Rico under the licensing.

Lightplane Sales Ahead of Last Year For January-June

Shipments of 3,453 lightplanes billed at $55,629,000 during January-June, 1958, versus 3,346 planes billed at $53,252,000 for the first half of 1957 were reported for 9 manufacturers by the Aircraft Industries Association's Utility Airplane Council. Cessna Aircraft Company led the industry, increasing its first-half volume from 1,257 airplanes billed at $14,940,000 last year to 1,581 planes

(Continued on page 55)

WING TIPS

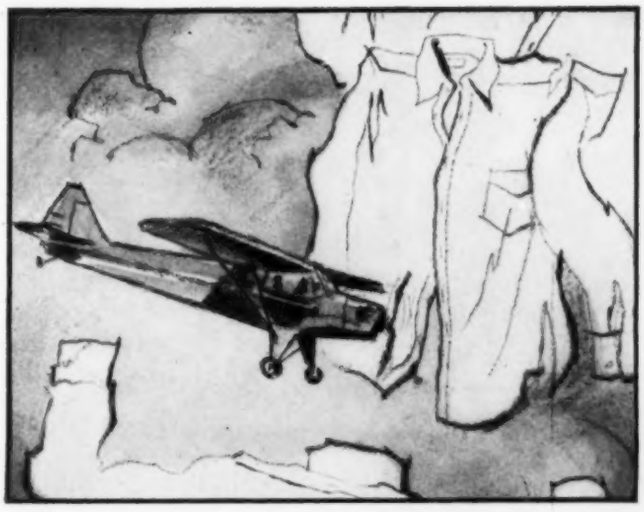


PROP WASH. As you know, when the giant four-engine planes of today take off, they create tremendous air turbulence, or prop wash. You're well aware of the havoc this can cause small planes, if you've ever tried to land one on the same strip, under these conditions. Suggestion: to be on the safe side . . . come in on the windward – or clear – side of the strip.

SKY WATCH. Everybody knows that boredom causes accidents. Since this is particularly critical in the air, it's a wise pilot – no matter how experienced he may be – who makes a constant effort to keep alert: checks his instruments frequently, studies the sky for weather clues and other aircraft. When accompanied by others, it pays to organize a sky watch.

CONVENIENCE. That's a word almost synonymous with air travel . . . a popular reason why more and more flights are being flown by more and more private planes each year. It's the very same reason Esso Aviation Credit Cards are becoming more popular, too. Having one is your passport to charge-account convenience. With an Esso Aviation Credit Card, you can charge gasoline, oil, and lubricants *plus* tire and battery service, landing fees, overnight in-transit storage and minor repairs.

ESSO STANDARD OIL COMPANY



WHITE ISN'T RIGHT. Did you know that light-colored shirts reflecting in the windshield, particularly at night, can give the illusion of clouds? With air lanes as crowded and fast-moving as they are today, it's a good idea not to wear anything in the cockpit which might interfere with vision. Therefore: white just isn't right!

REMEMBER. For "Happy Flying" . . . look for the famous Esso Sign, trademark for more than 600 dependable Esso Aviation Dealers.

TRY IT IN YOUR BUSINESS

A DEMONSTRATION COSTS YOU NOTHING!

Obviously no company invests in a helicopter blindly. First, it hears the facts from other helicopter users — examines these successes. Then it studies its own transportation problems in the light of other corporate experience. After that, it asks for a Bell demonstration — gets the answers to a lot of questions this quick, revealing way. By trying the Bell — through demonstration — your company may discover a mine of operational savings. Step one for you: Simply contact us today. Department 12-I, Bell Helicopter Corporation, Fort Worth, Texas.

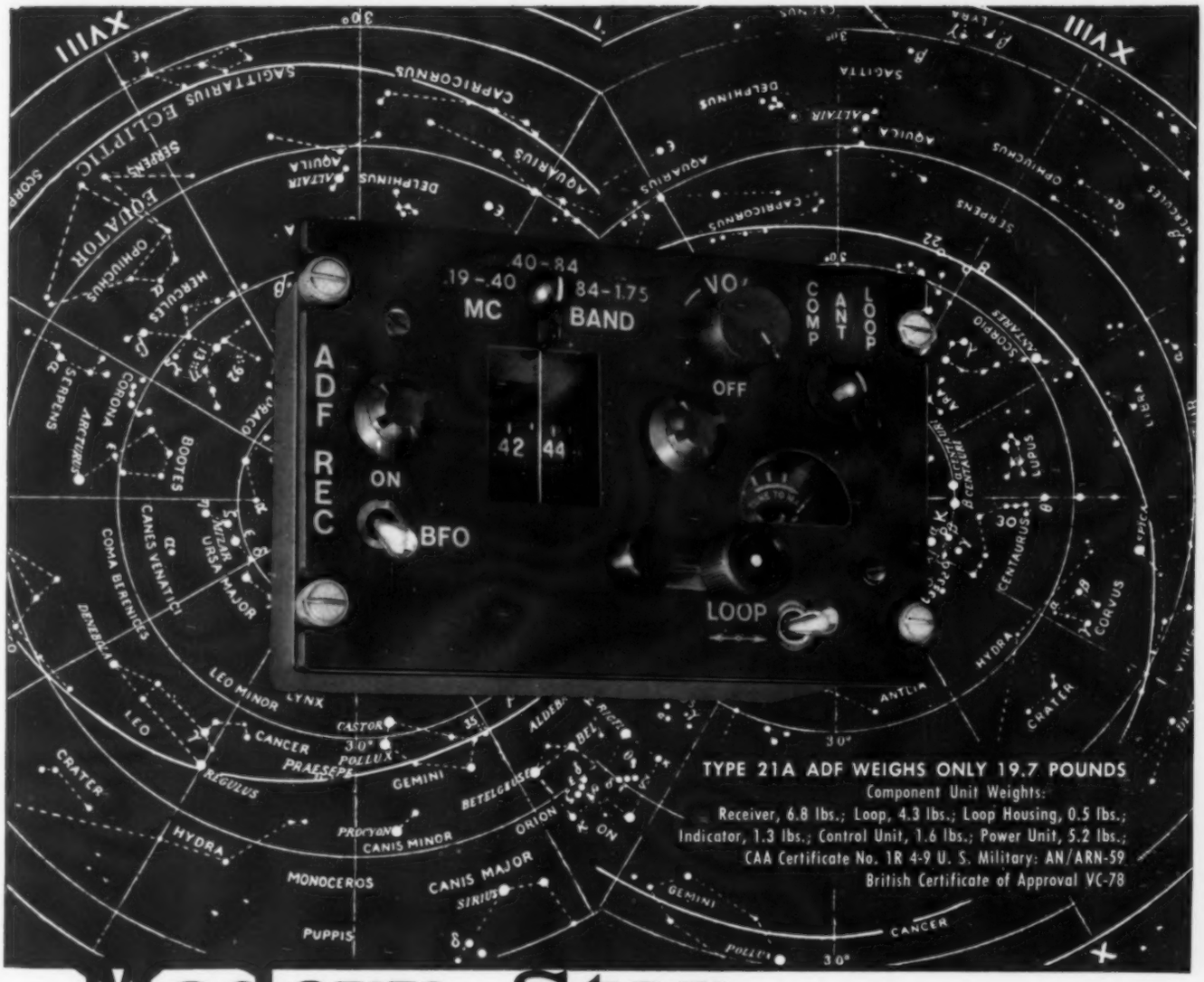
Extraordinary opportunities for highly creative engineers with extensive academic background to enter the new and challenging field of helicopter research and design. Send Resumé.

U. S. Air Force H-13J

Bell Helicopters have the longest, most distinguished record with the U. S. Armed Forces of any helicopter in the world.

BELL Helicopter CORPORATION

SUBSIDIARY OF BELL AIRCRAFT CORPORATION • FORT WORTH, TEXAS



Modern Star

For World-Wide Aircraft Navigation

ARC's TYPE 21A AUTOMATIC DIRECTION FINDER

Because it can be tuned to some 60,000 transmitters, spread all over the world, the ADF is a widely used navigation aid. Important news about the ADF, however, is that ARC has engineered this basic instrument down to less than 20 pounds in weight, with a comparable saving of space.

Now pilots enjoy the advantages of dual installations of this compact miniaturized equipment in tolerable weight and space requirements.

The ARC Type 21A ADF is built to today's more critical speed and environmental demands. It has hermetic sealing of vital components, such as the entire loop assembly. It covers all frequencies from 190 kc to 1750 kc . . . operates on only 2.8 amps at 27.5 volts dc input or equal power at 13.5 volts. A significant feature is the extremely low loop drag — only two inches outside the aircraft skin.

Ask your dealer for detailed literature.

Dependable Airborne Electronic Equipment Since 1928

Aircraft Radio Corporation BOONTON, N. J.

OMNI/LOG RECEIVERS • MINIATURIZED AUTOMATIC DIRECTION FINDERS • COURSE DIRECTORS • LF RECEIVERS AND LOOP DIRECTION FINDERS
UHF AND VHF RECEIVERS AND TRANSMITTERS (5 TO 360 CHANNELS) • INTERPHONE AMPLIFIERS • HIGH POWERED CABIN AUDIO AMPLIFIERS
CHANNEL ISOLATION AMPLIFIERS • OMNIRANGE SIGNAL GENERATORS AND STANDARD COURSE CHECKERS • 900-2100 MC SIGNAL GENERATORS

30 YEARS OF ACHIEVEMENT IN AIRBORNE ELECTRONICS 1928 ARC 1958

now . . . business flying

Time in transit is time on the job

Jet Age business flying is here. Fairchild, which set the pace in delivering America's first turbine powered aircraft to an airline, is now ready to deliver its executive sister ship to the first of many progressive U.S. corporations.

The executive F-27 provides corporations with the same first class luxury it brings to commercial airlines. Unmatched as a modern "flying conference room", the executive F-27 features Jet Age performance and dependability unique in its class. And it's available today!

The F-27's two Rolls-Royce Dart RDa7 propjet engines provide dependability proven in five million hours of airline and executive operation.

Ultra modern conveniences

Quiet comfort of earthbound office

enters the jet age!

The Fairchild F-27 is a triple-tested transport. Subjected to six years of intensive testing, the F-27 enters the Jet Age as the most completely tested aircraft in commercial history. Proved out in wind tunnels, torture tests and flight tests, the F-27 enters service with more hours of testing than any other new corporate airplane. From the first, F-27 executive operators will be able to call upon an established worldwide network of service facilities.

And no other executive aircraft offers this combination of comfort and performance:

- **Air conditioned on the ground as well as in flight**
- **Pressurized for high altitude flying**
- **Weather Radar for smoothest cruising**
- **Hushed engines, lowest vibration levels**
- **Cargo capacity customed to operator requirements**
- **300 mph cruising, 2250 mile range — operates from small airports closed to other aircraft of its size**

Planned from the design stage as an executive transport, the Jet Age F-27 "flying conference room" is available in a standard 16 office-passenger arrangement, or with custom interiors tailored to the needs of individual operators. The executive F-27 can accommodate up to 36 people.

The F-27 permits fullest utilization of any company's most valued asset—its executive manpower; it transforms "time in transit" into "time on the job"; and it matches the performance and luxury of first class jet express airliners.

Success comes along for the ride when your executives fly

FAIRCHILD F-27

Soon to perform for fifteen progressive corporations, including:

GENERAL TIRE AND RUBBER COMPANY, CONTINENTAL CAN COMPANY, BUTLER AVIATION (WASHINGTON), BANK OF MEXICO, WESTINGHOUSE ELECTRIC CORPORATION, IDEAL CEMENT COMPANY, CHAMPION SPARK PLUG COMPANY, AND KIMBERLY-CLARK CORPORATION. F-27's ARE ALSO BEING DELIVERED TO 15 UP-TO-DATE AIRLINES.*

*Will receive the initial F-27 in October.

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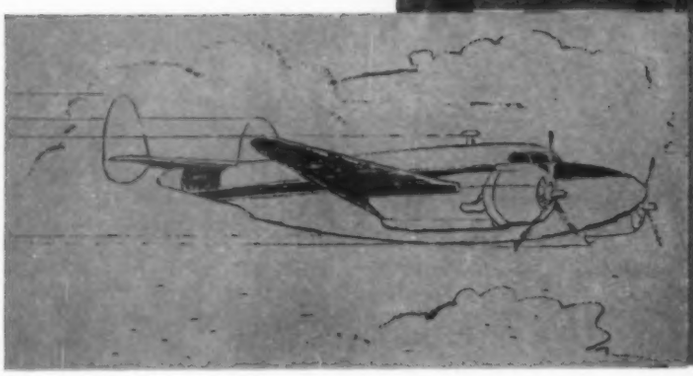

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THE WIDER WING SPAN of the Aero Commander 680E introduces a new, high standard in useful load capacity for executive aircraft. Here is a 7,500 lb. aircraft with more than 3,000 lbs. of useful capacity—greater loads without sacrifice of long range and superb Commander performance!

The over-25,000-feet high-flying ability of the 680E will carry you above the weather, and its 225-plus mph cruising speed will get you there faster! It has a non-stop range of more than 1,400 miles and it will climb at 1,525 fpm! And the 680E will takeoff or land, clearing 50-foot obstacles, in 1,625 feet!

A COMPLETELY DEPENDABLE, all-weather airplane, the 680E will operate safely at altitudes above 14,000 feet on only one of its 280 hp, supercharged, Lycoming engines!

THE NEW AERO COMMANDER 680E brings you all these advantages plus the unparalleled stability and comfort of its familiar, built-like-a-bird, high-wing design which has gained the respect of pilots all over the world. You'll approve every feature of this remarkable aircraft! Write today for specifications and performance data!

NEW & FINER 680E FEATURES

- Flexible, functional, dual instrumentation.
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THREE-WAY SPECIALIZATION:

"Top Hands" Offer Gulfstream Package

HORTON & HORTON, ASSOCIATED RADIO LINKED WITH SAC

Sometimes three "top hands" are better than one.

Such is the case with a three-way package plan conceived by Southwest Airmotive for distributing, equipping, and servicing Grumman's great, new turbo-prop Gulfstream.

The hand distributing the aircraft, and providing for the continuing maintenance of the airframe and its Rolls-Royce Dart engines, is that of Southwest Airmotive at whose plant Grumman and Rolls-Royce field service representatives will be based for consultation.

The magical touch of beauty will be applied by the hand of Horton & Horton Custom Works, Inc., commissioned by us to design, engineer, and fabricate Gulfstream interiors in cooperation with the Southwest Airmotive aircraft division at Dallas.

Our third "top hand" is Associated Radio, Inc., which we have appointed to engineer and install Gulfstream electronics and radio systems. Shops of this Hemispheric-favorite now are housed in space leased in SAC's new facility at Dallas' Love Field.

Personal presentations of this plan will be made anywhere in the U. S. at the customer's convenience. Write for details.

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EDITORIALS

Records For Boling

PAT Boling's Beech-sponsored nonstop flight late in July across the Pacific ocean from Manila, Philippine Islands, to Pendleton, Oregon, set a record for single-engine aircraft and was the longest-distance non-refueled airplane flight in commercial aviation history. Boling and his Beechcraft J35 Bonanza, powered by a 250-hp. Continental engine with fuel injection, deserve our highest plaudits — this was the finest demonstration of solo distance piloting and mechanical integrity yet recorded. Boling's Bonanza, with an empty weight of only 1,850 lbs. plus extra fuel tanks to give him 402 gals., grossed 4,964 lbs. at take-off. It carried a 3,000-lb. payload, three times its normal useful load. Even under this severe penalty, the J35 Bonanza averaged 155 mph. over a nonstop distance of about 7,090 miles as Boling, a long-time United Air Lines captain, efficiently followed his ingenious flight plan 45 hrs. and 43 mins. to get the last ounce of performance out of his machine. Despite the handicaps of load, weather and fatigue, Boling was able to average better than 18.1 miles per gallon of fuel and less than 8.5 gals. per hour for fuel consumption.

This was a remarkable flight not only for aircraft reliability but also for human endurance. Forty-six hours or so is a mighty long time to occupy a seat, even in an easy chair at home — it is incredible how it was endured by a lone airman having to work endlessly and unerringly at the complicated task of long-distance navigating, fuel management and piloting.

Back in the old days of spectacular flights by Lindbergh, Griffin, Mattern, Post and Earhart and their contemporaries, the real shocker was that an airplane could go so far. Today it's the endurance of the pilot.

It is difficult to measure the value to aviation of such record-smashing single-engine flights. The interest of people who fly is in such matters as how did he pack so much fuel into a lightplane, the weather conditions he experienced, the navigation and communication problems encountered. To people who don't fly, perhaps such exploits add something to the impression that small airplanes are very reliable, indeed. The publicity is a one-shot deal and is then forgotten.

Stunt flights are rapidly becoming a thing of the past, so Boling's probably will never be beaten. Let those who might try remember one thing — Pat Boling is a professional and a top physical specimen. There's no longer any percentage or glory in amateurs attempting any kind of aviation record in any category of airplane — it's all been done before.

Aviation's task now is to find ways and means of selling — of putting to use for people who are ground-bound — the known reliability, stamina, comfort and speed capabilities of aviation's outstanding business aircraft — not try to prove how long the man at the controls can sit there and take it and remain alert and efficient.

Our New Federal Aviation Agency

THE independent Federal aviation agency established by the Congress this summer will be implemented just as soon as the President signs the bill and appoints the boss. Since practically every segment of civil aviation endorsed the fundamental changes incorporated in the new civil aeronautics act there is a definite feeling of optimism throughout the industry that the centralization of authority and divorcement of CAA from the Department of Commerce will produce healthy results for U. S. aviation.

We concur with this general optimism and see only one big "IF" on the horizon — everything will work out well if the new independent agency is staffed with competent leadership. The long-debated theories incorporated into the Federal Aviation Act are sound but they will work in day-to-day practice only if experienced aviation leadership is at the helm. The new law requires that the "Administrator at the time of his nomination shall be a civilian and shall have had experience in a field directly related to aviation." The Deputy Administrator may be a member of the armed forces and it is generally conceded that a military man will hold down this post. The way is left open for complete military domination of the agency by the military in substance, if not in fact, should the President appoint an ex-military man as Administrator. This is a real danger inherent in the act.

But little is to be gained at this point by worrying about what could happen to the new Federal Aviation Agency. The problems are the same as they were last month. It is hoped that the solutions to the problems facing all aviation will be subject to faster and more intelligent handling now that there is a concentration of independent power in an independent agency, minus the hamstringing suffered during recent years under Department of Commerce domination. It now remains for the President and his advisors to come up with real top-flight leadership dedicated to the proposition as spelled out in the law that they must "encourage and foster the development of civil aeronautics and air commerce in the United States and abroad" and "shall give full consideration to the requirements of national defense, and of commercial and general aviation, and to the public right of freedom of transit through the navigable airspace."

Sorry leadership will only prolong the sorry mess we find ourselves in today — a tragic situation that inspired the Congress to re-write the basic civil aeronautics law of the land. Intelligent and dedicated leadership will lead us swiftly out of the bureaucratic morass of the past decade.

Just Another Rumor

SOME people with a twisted sense of humor, or a twisted sense of something, get satanic joy from spreading baseless rumors. Dur-

(Continued on page 46)

Vought Vocabulary

dy·nam′ic: *a manned weapon for space-edge duty designed in the image of a champion*

With Chance Vought's new F8U-2 *Crusader,* America's defense strength rockets to the threshold of space. This Navy fighter has the speed, range and staying power to master the upper atmosphere. A manned aircraft, its pilot brings human intelligence to an advanced aerial weapon whose capabilities outstrip those of ordinary jet fighters. At his command, this lethal weapon can hide and seek . . . strike and strike again.

On its first flight, the F8U-2 easily beat the fastest official speed of the record-breaking F8U-1 *Crusader.* It climbed to heights reached a few years ago only by rocket-powered research craft. It carries advanced fire-control and radar systems, and awesome armament: cannon, rockets, missiles.

The dynamic design of this new carrier-based fighter is a *proven* one . . . incorporating the finest features of the celebrated F8U-1 *Crusader,* already giving Navy pilots unmatched air/sea strength.

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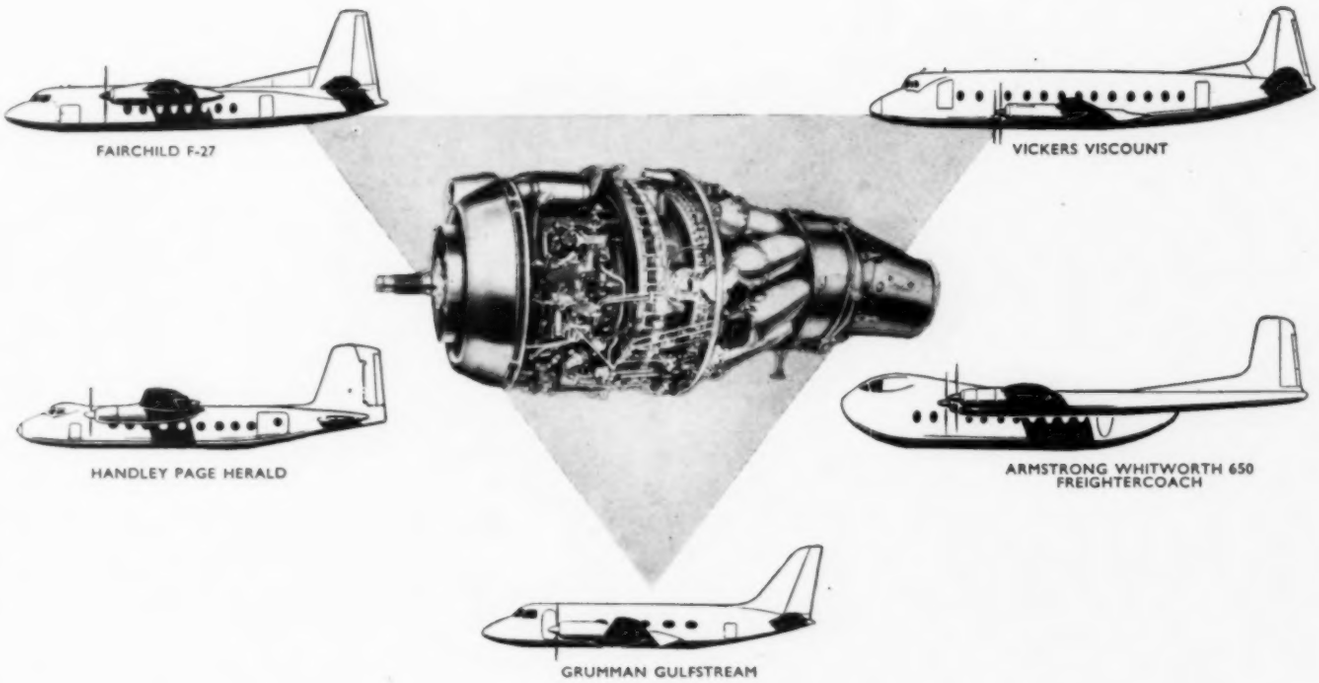

The Rolls-Royce Dart is the most proven prop-jet in the world and has flown over 5,000,000 hours in scheduled airline service.

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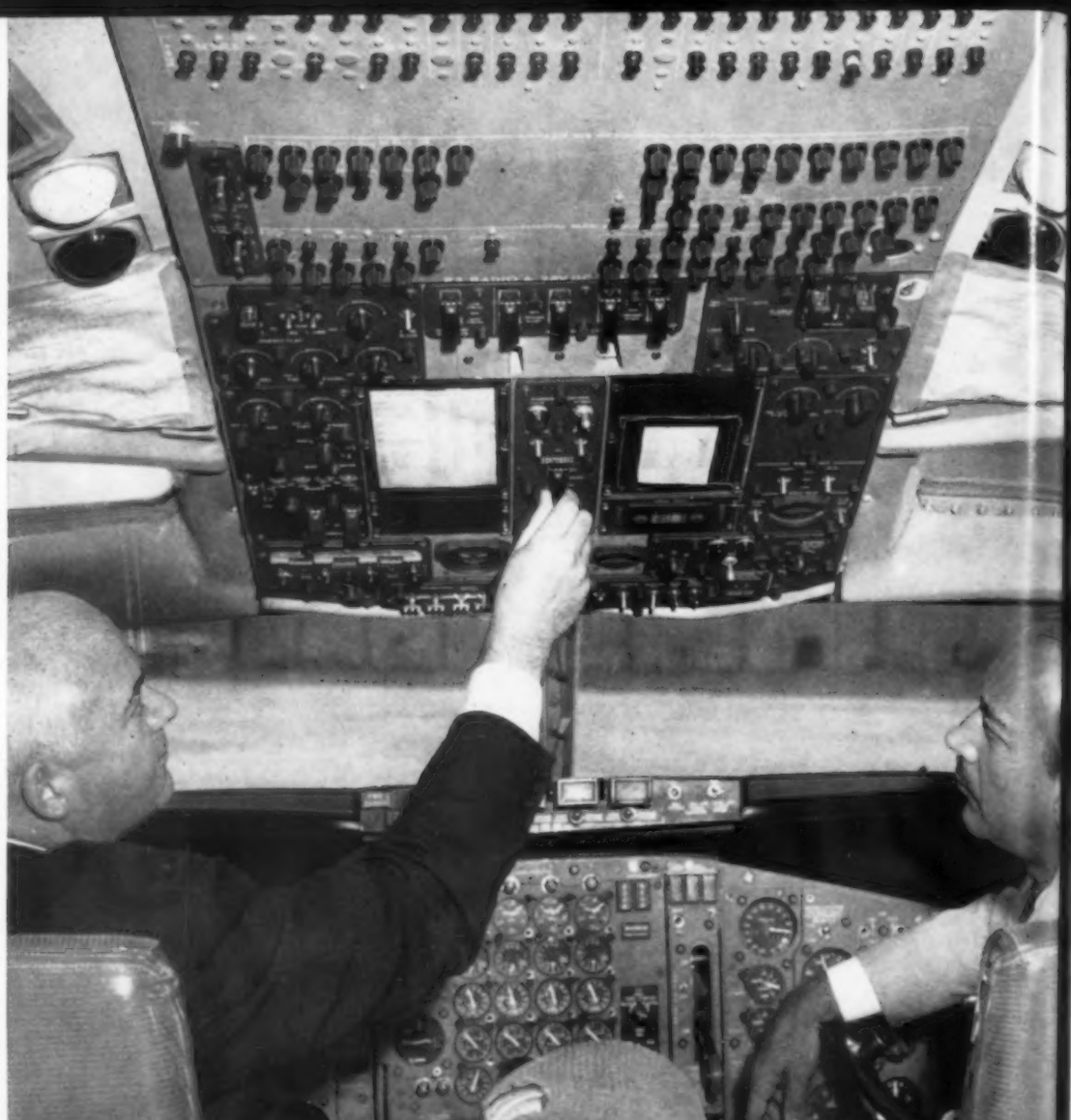

Veteran test pilot Fisher gets 707 flight test checkout from long-time friend Tex Johnston, Boeing Chief of Flight Test.

Noted test pilot gives a behind-scenes operational report on America's first jet airliner . . . another in Champion Spark Plug Company's series on aviation history in the making

FLIGHT TEST, 707!

by HERB FISHER

International aviation authority, veteran test pilot, author

The 707 seats 112 to 180 passengers. New York to London, 6½ hours! Pan American starts first jet service to Europe this Fall.

That "greatest-yet" moment in American aviation history—dawn of the commercial jet age—stands at zero hour. Pan American has just taken delivery on the first of 23 Boeing 707 turbojets. Other airlines will put Douglas, Convair and Boeing turbojets in service in the months to come. It's been a long count-down . . .

The 707, designed to cut existing passenger schedules in half, was first flight tested on July 15, 1954. A transcontinental speed record was almost automatic—Seattle to Baltimore, 3 hours, 48 minutes; cruising speed, 612 mph.

As a test pilot who's flown about every type of transport including the 707, I'll say right now it's impossible to describe the performance difference between the 707 and conventional aircraft. The 707 is a pilot's dream as well as a passenger's. It's easy to fly. Its performance is superb . . .

You flick a switch. Champion jet igniters fire three- to four-inch bursts into the combustion chambers every second for 30 seconds. The 112- to 180-passenger aircraft comes alive instantly. No warm-up necessary. Flight test is on.

Releasing brakes for takeoff, you realize in an odd moment of pride-spiked humility that your finger tips command $5 million of precision-built aircraft—and 60,000 pounds of thrust that's going to ram skyward *a mass nearly twice the weight of today's big propeller airliners.* The 125-ton ship breaks ground at 150 knots. You feel a surge as retracting land-

ing gear and flaps reduce drag. Soon you're at 300 knots indicated. Your rate-of-climb is more than double that of present-day aircraft.

I climbed to 35,000 feet in 13 minutes.

Cruising at 600 mph between 30,000 and 40,000 feet—well above weather and where jets perform best—you sit back, smile, look around. Absence of piston-engine throb delights you. There's practically no vibration. You hear turbines whine but faintly. Aft, passengers will hear only a faint whistling, will not be buffeted by ordinary turbulence.

You check your 20 engine instruments again. It's quick and easy: All needles are parallel during normal operation. All the pilot need do is watch for a needle off parallel!

Pilots, the simplicity and honesty of jet control is like a prayer answered. Gone are prop synchronizer, supercharger, cowl-flap, mixture, carburetor-heat and prop-pitch controls and mag switches. Primary flight controls are 100 per cent manually operated. No power-boost. Spring tabs cable-connected to wheel and rudder pedals actuate controls. Internal pressure balances provide low control forces for low-speed maneuverability and higher forces for high speeds where abrupt maneuvers aren't desired. End result—"natural" feel. No sluggishness, no over-sensitivity.

Mid-span, high-speed ailerons supplemented by hydraulic spoilers and (when flaps are down) use of outboard, low-speed ailerons simplify lateral control. This permits safe operation from airports with a 90° crosswind of 30 mph, and the spoilers provide speed brakes for a wider choice of approach angles.

Power control is simple as a broom handle. A single lever mechanically connected to a hydro-mechanical regulator on the engine slows and speeds the plane. Fuel-air ratios take care of themselves.

For dual reliability, each engine has normal tank fuel flow plus two independent electric boosters. Engine-driven pumps feed fuel if the electric pumps are lost. In emergency, a manifold line may draw fuel from any tank. Likewise, the 707 has two independent hydraulic systems for actuation of spoilers, flaps, landing gear, nose-gear steering and brakes.

Even over air-turbulent Mt. Rainier, 707 passengers will experience but slight, springy motion.

You put the 707 through her paces. Then—the crucial moment: *You simulate flameout*, though chances of it happening are slim. Engine is dead. And the life-trigger—the jet igniter—has been in this jet furnace *enduring temperatures of thousands of degrees for hundreds of accumulative flight-test hours . . .*

Flameout. You take comfort in the knowledge that Champion's long history of spark plug development includes *unique* know-how with jet igniters dating back to the birth of experimental jet engines—those built by General Electric in wartime 1943! And that Champion was first with jet igniters in military aircraft—and has held that lead since . . .

You flick the switch. Two jet igniters spit lightning into the dead turbine. The big Pratt & Whitney engine flashes to life.

Flight test secure, you descend comfortably at 10,000 feet a minute. With speed brakes, single-motion power control and provision for lowering wheels at cruising speed, slow-down distance is but *two miles*. Go-around safety is assured. The big ship maneuvers easily in the traffic pattern.

The 707 goes into service as the most thoroughly tested airliner in history, Tex Johnston, one of the great test pilots, tells me. It's backed by 24,000 hours of wind tunnel testing, 1,500 hours of flight testing—plus the performance record of its military counterparts.

Likewise has the reliability of the vital Champion jet igniter been established—15 years of testing and performance in military aircraft operating under grueling conditions, four years in exhaustive 707 flight testing. Champion's depth of experience and demonstrated ability to make metal and ceramic parts capable of perfect functioning in fantastic temperature ranges led Pratt & Whitney to Champion when the J-57 engine was being developed. A jet igniter must not only be capable of re-igniting the turbine at critical altitudes and speeds, it must deliver instant starts on takeoff day after day.

Today Champion is teamed with engine manufacturers in advanced jet engine development and remains the greatest volume producer of jet igniters in the industry—hence the superior igniters at much lower competitive costs.

Tomorrow . . . well, this is *it* for Pan Am, American Airlines—and the 707!

Champion Spark Plug Co. • Toledo 1, Ohio

. . . salutes the Boeing Airplane Company

Airframes in assembly at Seattle. Boeing takes extra pains with 707 airframe structural safety and endurance.

Fisher and Rudolph Blazek, Experimental Pre-flight Foreman, inspect Champion jet igniter in 707 turbine.

Alouette Sets Six New World Records

Farmingdale, L. I.—Among six records for rotary-wing aircraft established by the Alouette, a jet-powered helicopter, is a new world altitude figure of 36,501.125 feet. This is 6,201.125 feet higher than the one set in December 1957. Official confirmation is expected shortly from the Federation Aeronautique Internationale. The information was released here by Republic Aviation Corporation, who assembles and markets this five-place, French-designed craft in the United States and Canada.

All six records were set at the French Air Force Test Center, Bretigny, on June 13, a Republic spokesman stated. Included was a record for climbing to 31,267 feet with two passengers, topping the mark for helicopters in the 2,205-lb. to 3,858-lb. payload class.

The Alouette is not only setting new world records abroad, but in the U. S. it is establishing outstanding operational figures daily. One example is its performance for Aetna Helicopters, Inc., flying out of New Mexico for the U. S. Forestry Service. Within 30 days, one Alouette has . . . carried 54,623 lbs. of cargo, 214 passengers—made 246 flights—flown 97.51 hours with an amazing corrective maintenance figure of only 3 hours. Working at altitudes ranging from 7,000 to 10,000 feet every time, as many as 32 missions have been accomplished in one day of operation.*

Equally impressive are the Alouette's commercial performances at sea level. Operating out of Louisiana in the Gulf of Mexico, the Alouette II is now serving oil rigs located 72 miles off shore at high temperatures and under maximum gross load requirements.

For fulfillment of private, commercial and government helicopter requirements, the Alouette II offers extraordinary versatility, reliability, economy.

**Designed by Sud Aviation*

Contact Helicopter Division for literature and demonstration flight. EARLY DELIVERY.

REPUBLIC AVIATION CORPORATION

HELICOPTER DIVISION

FARMINGDALE, LONG ISLAND, N. Y.

MORE "BARK" THAN "BITE"

in this front...

with RCA's new WEATHER RADAR in your plane!

When the weather looks like this, the old rule book says "go around." But not when you have RCA's AVQ-50 in your business or executive aircraft. Its scope will point out to you, night or day, or in IFR conditions, non-turbulent paths through or between storm areas that may save time-wasting, costly detours and give you and your traveling companions a smoother, more comfortable ride.

In addition to giving you this "look-see" into the weather as far as 80 miles ahead, the AVQ-50 provides ground-mapping information. Because of its lightness, efficiency and dependability, the AVQ-50 is being specified as standard equipment by operators of executive aircraft where weight, space and power are at a premium.

For further information address . . .

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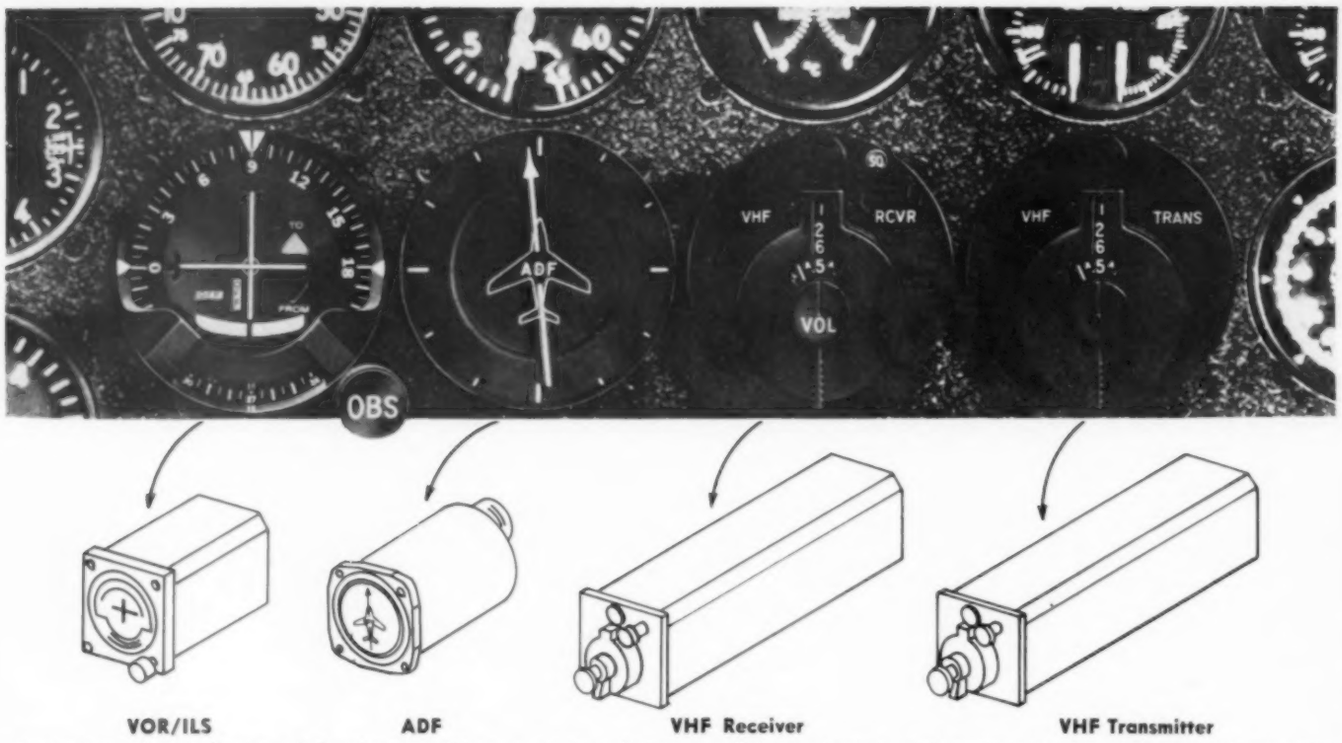


Typical panel installation of Lear's new Navcom system shows complete navigation and communication with omni-instrument landing system and ADF. Sketches below show panel-mounted and rack-mounted units with weights and dimensions for various packages.

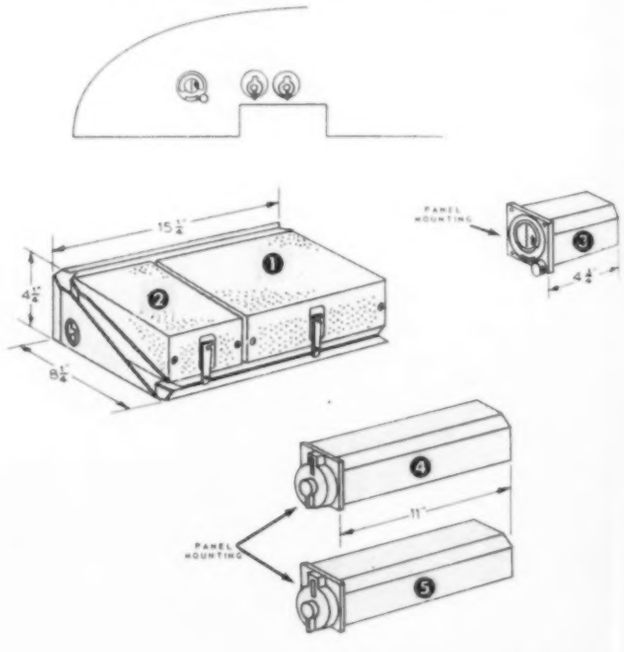
New Lightweight Lear Navcom System

A new and complete line of miniaturized, lightweight aircraft navigation and communication equipment, featuring crystal-controlled digital tuning, has been announced by Lear, Inc., and is being marketed as the Lear "Navcom" line for both 12-volt and 24-volt aircraft electrical systems.

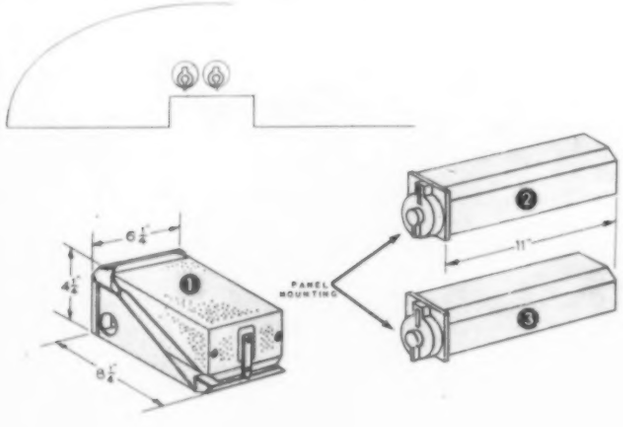
Perfected to meet CAA TSO requirements, the new line will consist of a Lear Navcom 100 Series and a Lear Navcom 200 Series, the LNC-100 providing 190-channel receivers and 90-channel transmitters while the LNC-200 provides 560-channel receivers and 360-channel transmitters.

Either series may be expanded from primary radio for small single-engine aircraft to complete airline-type systems meeting the most complex navigation and communication needs. Both series feature modular construction and building block design. Lear's first

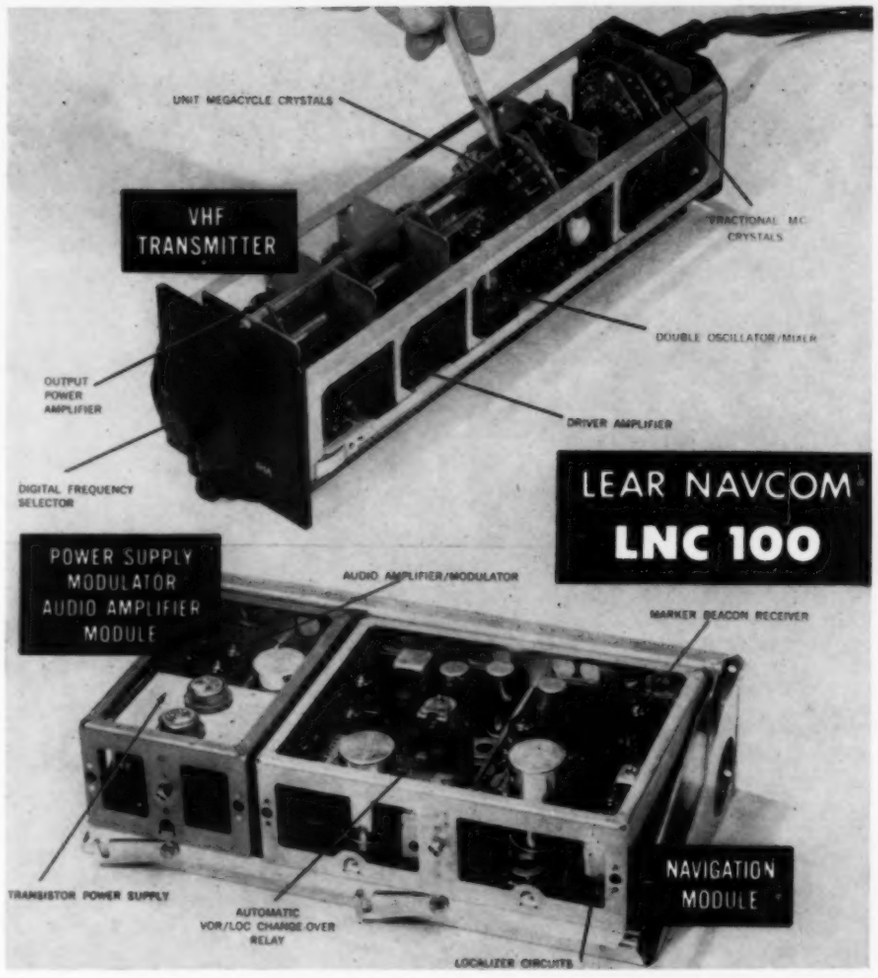
LEAR NAVCOM LNC-100B — total weight 15.5 lbs.: (1) navigation module (aural marker identification only), (2) power supply-modulator-audio amplifier, (3) VOR/LOC indicator-course selector, (4) receiver, (5) transmitter.



LEAR NAVCOM LNC- 100A — total weight 9 lbs.: (1) power supply-modulator-audio amplifier, (2) 190-channel receiver, (3) 90-channel transmitter.



Advanced electronic features of the new Lear Navcom LNC-100 series are displayed in this picture showing inside the miniaturized VHF transmitter, transistorized power supply-modulator-audio amplifier module and navigation module. Note crystal frequency controls, digital tuning and compactness.



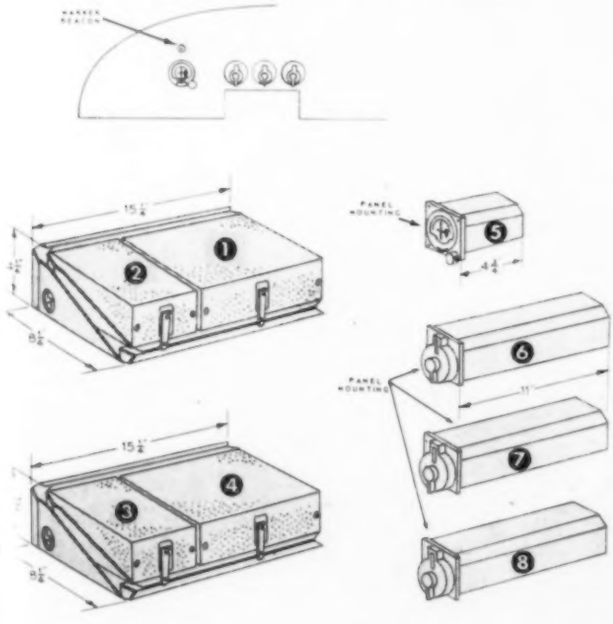
release of details last month covered only the LNC-100 series.

An outstanding unit in the new line is a new transistorized power supply-modulator-audio amplifier (Model 2355A for 12 volts and 2355B for 24 volts). It weighs only 2.3 lbs., has no moving parts, furnishes power for most LNC-100 systems including transmitter, receiver, navigation module and glideslope receiver, and contains a 5-watt audio amplifier for adequate speaker operation under all conditions. This transistorized power supply unit mounts remotely and is connected to the transmitter and receiver by a single lightweight cable.

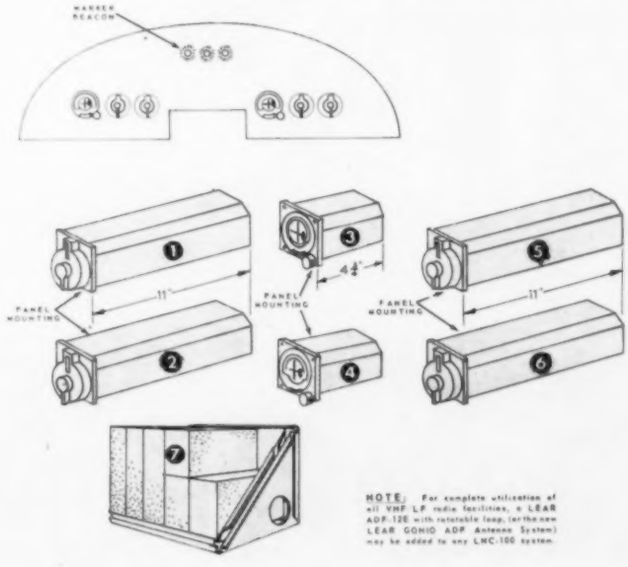
The LNC-100 series includes 10 components for either 12 or 24-volt systems. These are as follows, with the weight of each: VHF receiver 3 lbs., VHF transmitter 2.6 lbs., power supply-modulator-audio amplifier module 2.3 lbs., navigation module (aural marker beacon receiver) 4.5 lbs., navigation module (single-light/-aural marker beacon receiver) 4.6 lbs., 20-channel glideslope receiver 4.1 lbs., 10-channel glideslope receiver 4.1 lbs., VOR/LOC indicator-course selector 1.2 lbs., VOR/ILS indicator-course selector 1.5 lbs. and 3-light/aural marker beacon receiver 2 lbs.

Factory-produced shockmounts, which may be installed in horizontal or vertical position, are provided in four sizes, as follows: ½ size 1.1 lbs., full size 1.9 lbs., 1½ size 1.9 lbs. and multiple module size 4.2 lbs.

LEAR NAVCOM LNC-100C — total weight 27.2 lbs.: (1) navigation module (aural/single-light marker identification), (2) and (3) power supply-modulator-audio amplifier modules, (4) 10-channel glideslope receiver, (5) VOR/ILS indicator-course selector, (6) and (7) receivers, (8) transmitter.



LEAR MA NAVCOM LNC-100D — total weight 38.1 lbs.: (1) and (2) receivers, (3) and (4) VOR/ILS indicator-course selectors, (5) and (6) transmitters, (7) multiple shockmount containing 2 power supply-modulator-audio amplifier modules, 2 navigation modules, 1 20-channel glideslope receiver and 1 3-light/aural marker beacon receiver.



NOTE: For complete utilization of all VHF LF radio facilities, a LEAR ADF-12E with rotatable loop, (or the new LEAR GONIO ADF Antenna System) may be added to any LNC-100 system.

From these components and shockmounts, four typical LNC-100 packages may be combined as follows to illustrate the compactness and light weight they offer:

LNC-100A Package: 1 receiver, 1 transmitter, 1 power supply unit and one ½-size shockmount, total weight only 9 lbs.

LNC-100B Package: 1 receiver, 1 transmitter, 1 power supply unit, 1 navigation module (aural marker beacon receiver), 1 VOR/LOC indicator-course selector and one 1½-size shockmount, total weight only 15.5 lbs.

LNC-100C Package: 2 receivers, 1 transmitter, 2 power supply units, 1 navigation module (single-light-/aural marker beacon receiver), 1 ten-channel glideslope receiver, 1 VOR/ILS indicator-course selector and two 1½-size shockmounts, total weight only 27.2 lbs.

LNC-100D Package: 2 receivers, 2 transmitters, 2 power supply units, 2 navigation modules (aural marker beacon receivers), 1 twenty-channel glideslope receiver, 2 VOR/ILS indicator-course selectors, 1 3-light/aural marker beacon receiver and 1 multiple module-size shockmount, total weight only 38.1 lbs.

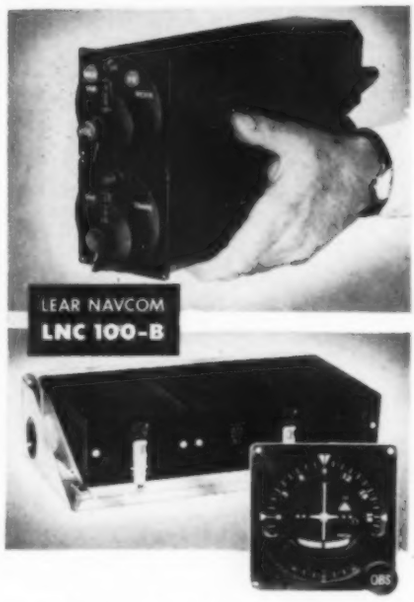
Lear's new lightweight ADF12-E2 may be added to any of the LNC-100 packages — it weighs a total of 17.8 lbs. with rotatable loop and 19.2 lbs. with the new gonio antenna system.

All of the new units feature very low power consumption, as indicated by the following examples:

	12-volt	24-volt
VHF receiver	1.5 amps	.7 amp
VHF transmitter	.8 amp	.4 amp
Power supply unit	5.0 amps	2.5 amps
VOR/localizer	1.6 amps	.8 amps
Glideslope receiver	1.4 amps	.7 amp

The new Navcom line is the latest culmination of Bill Lear's long-time efforts to provide the private, executive and airline categories of aviation with miniaturized, lightweight, volume-priced flight equipment capable of the most sophisticated performance. He believes fully automatic flight will become a necessity for business planes within a few years. His new push-button "LIFE" system (for Lear Integrated Flight Equipment) was described in these columns recently. Lear has made history in aircraft radio since 1933 when he developed his first aircraft radio equipment for private planes. In more recent years, his L-2 pioneered automatic pilots for lightplanes and over 5,000 of them have been produced.

The Lear-Cal Division of Lear at Santa Monica now has under way a $2,600,000 program of development for lightplane-business aircraft equipment and the new Navcom 100 line is the newest development to result from it. Simultaneously, Lear is well along in the perfection of complete nationwide factory servicing of its equipment to back up its sales with guaranteed service for customers through strategically-located branch factory service centers.



This is the Lear Navcom LNC-100B package, showing lightweight crystal-controlled 190-channel receiver and 90-channel transmitter at top and single-shockmount containing power supply-modulator-audio amplifier module with navigation module mounted together. Instrument is Lear Model 4080 indicator-course selector incorporating course selection, to-from, left-right indicators with reciprocal bearing visible at all times.

Interesting details about the new Navcom 100 line include the following:

The Model 5609A VHF receiver, 12 or 24 volts, weight 3 lbs., has 190 crystal-controlled channels with 100-kc spacing over a frequency range of 108.0 to 126.9 mc (to assure adequate frequencies in future years, it has 240-channel capability in .10-mc steps — 108.0 to 131.9 — or 480-channel capability in .05-mc steps — 108.0 to 131.95 — for extended range requirements). Digital tuning gives instant and positive frequency selection, no fine tuning being necessary. It has adjustable squelch control, 5-watt audio amplifier output, edge-lighted panel to eliminate glare and provides for automatic glideslope channel selection when tuned to a localizer frequency.

The Model 5640A VHF transmitter for 12 or 24 volts weighs 2.6 lbs., and has 90 crystal-controlled channels with 100-kc spacing over a frequency range of 118.0 to 126.9 mc. It has 140-channel capability in .10-mc steps (118.0 to 131.9) or 280 channel capability in .05-mc steps (118.0 to 131.95) for extended range requirements. Digital tuning is featured. Average power output is rated conservatively at 4 watts. Panel is edge-lighted.

The navigation module with marker beacon receiver weighs 4.5 lbs. and comes in four variations — Model 2374A is 12 volts and Model 2374B is 24 volts, both being aural only; Model 2374C is 12 volts and Model 1274D is 24 volts, both being single-light/aural. This module provides omni or localizer automatically, eliminating erroneous settings that may result from manual switching. It drives three meter loads and two flag alarms on both localizer and omni, will provide power for two meters plus approach coupler without additional amplification. Models 2374C and D include a transistor amplifier for single-light/aural indications, assuring positive identification of marker location when busy on ILS approach. Accuracy of plus or minus one degree under standard test conditions indicates its airline quality.

The Model 4080A indicator-course selector weighs 1.2 lbs. and incorporates omni bearing selector, to-from, left-right indications and shows reciprocal bearing directly. Coaxial meter movement design reduces magnetic disturbances and permits installation near magnetic compass.

The Model 4087A indicator-course selector weighs 1.5 lbs. and has all the Model 4080A features plus glideslope indications for complete ILS navigation, and glideslope and omni flag alarms.

The Model 5607A glideslope receiver provides 20 channels and the Model 5607D provides 10 channels, each weighing 4.1 lbs. and available either for 12 or 24 volts. Correct glideslope frequencies are automatically selected when a localizer channel is selected on the Navcom receiver.

The 3-light/aural Model 5608B 12-volt or Model 5608C 24-volt marker beacon receiver weighs 2 lbs. Models 5608B and C operate on their own internal power supply. An optional Model 5608A operates on an external power supply such as provided in Models 2355A or B power supply-modulator-audio amplifier module.

All units in the Lear Navcom 100 series include transistors where best suited and ruggedized tubes, printed circuits on epoxy glass boards, rhodium-plated contacts to eliminate intermittent contact failures and other advanced electronic techniques.

Flight view shows 450-hp. Snow S-2B at dusting altitude. Pilot seat is behind hopper. CAA-certificated and produced at Olney, Texas, S-2B can carry 2,500-lb. hopper load, sells for less than $10,000.

Success For Young Crop Plane Builder

By TOM ASHLEY

A young Texan has succeeded in developing, licensing, building and delivering new-production crop planes to a waiting list of agricultural operators for less than $10,000 each for 450-hp. models and under $8,000 for 220-245-hp. models.

He's Leland Snow, only 27 years old, and he has a formula to produce a radial-engine airplane the average ag operator needs at a low price the average operator can afford to pay.

Snow Aeronautical Company he's known as and there's a whole town of businessmen at Olney, Texas, who have "adopted" him and his company financially and are building him a brand-new 120-by-120-ft. factory.

Even without the plant, Snow has already delivered three of his new crop planes to operators. He has deposits for 41 airplanes, options for that many more and a "list of operators who want to get on the list" from which deposits will be accepted as soon as the plant is finished and production gets under way this fall.

Snow has two all-metal models, one a 220-245-hp. S-2A for either 220 Continental or 245 Jacobs engine and capable of carrying a 1,500-lb. payload in the hopper, and the other a 450-hp. Pratt & Whitney-powered

(Continued on page 46)

Snow crop plane has 285-sq. ft. high-lift wing, breaks ground in 1,650 ft. and climbs 500 fpm. with 2,500-lb. hopper load in 100-deg. heat and no wind at sea level, and lands at 38 mph. empty.

This Beech Travel Air and Bonanza will haul millions of baby chick "passengers" this year. They need no food or water for 72 hrs. after hatching, so the two 4-place airplanes rush them to major air terminals for air shipment all over the Western world.

Chicken A La Wing

How ideal characteristics of business planes prove indispensable to an industry

By GEORGE E. HADDAWAY

THERE used to be an old saying that one of the most over-rated things in the world was Southern fried chicken. After visiting Lloyd Peterson's chicken "ranch" in northwestern Arkansas last month, we're convinced the quipsters will have to find a substitute because the chicken business is booming. Air transportation is one of the reasons why.

Peterson started patronizing aviation right after World War II, chartering airplanes from veteran Fayetteville operator Ray Ellis. Peterson had a relatively small hatchery at Decatur, Arkansas, about thirty miles north of Fayetteville. Ellis convinced Peterson he should learn to fly. When rental and charter hours passed the 100-hours-per-year mark in 1953, Peterson Sales, Incorporated, decided to purchase an airplane. Because of cabin configuration, cabin ventilation and speed they purchased an E Model Bonanza from Gail Clark of Tulsair, Beech distributor for the area. This was in January of 1954. Every year since then, Peterson has traded the old Bonanza for a new one. Here's the record, revealing the ever-growing utilization factor:

Year	Bonanza Model	Hours Flown
1954	E	360
1955	F	480
1956	G	800
1957	H	960
1958	J (Jan.-July)	523

In July the Company put 112 hours on the J Bonanza. Last April, Peterson bought a Beech Travel Air and has put 167 hours on it during the first four months of ownership. They estimate they will fly the two airplanes a total of 2,000 hours in calendar '58.

The Bonanza is used exclusively to haul Peterson's baby chicks to regional distribution points. Lately the Bonanza has been making from two to three round trips a week to Atlanta, Georgia. With all the seats out except the pilot's, it hauls 4,000 chicks. Tulsair is planning a small modification to the baggage compartment which will boost the capacity to nearly 5,000. The chicks are a special breed of cockerel known as the Peterson White Cornish and bring $1.10 each, delivered. So the single-engine Bonanza carries $5,-500 worth of cargo on each flight.

"Thanks to the airplane, our sales are up two-and-one-half times over last year," Peterson told us. "In a few months our present expansion program will enable us to supply half the domestic market for meat-type cockerels, which is now about 80,000 a week. The Bonanza is ideal for our purposes because of the ventilation system and the cabin configuration which is ideally designed for the type of boxes we use. We have to have a terrific volume

As an airliner for chicks, Travel Air carries 5,000 "passengers" per flight. Shown being loaded with chicks in perforated airline boxes, the airplane's speed, cabin configuration for maximum loading and excellent ventilation system make it ideal for the transport job.

Because he can rush them by Bonanza and Travel Air to distant points in light, ventilated containers, Lloyd Peterson's chicken ranch at Decatur, Arkansas, produces millions of chicks annually and has its own 2,600-ft. runway on Crystal Lake, with lights and radio. Peterson bases his Travel Air and Bonanza 40 miles away at Fayetteville with Ray Ellis, long-time Arkansas aviation operator. The strip which baby chicks built has proved to be a haven for civilian and military airmen in emergencies.

of air passing through the airline type boxes or the chicks will die. The Bonanza is tailor-made from this standpoint."

Peterson is doing to the chicken business what cattlemen have been doing for years in the meat business — developing strains that produce more meat for less money in less time. It took ten years of scientific cross-breeding to produce the Peterson White Cornish, used by other breeders and crossed with purebred hens which, in turn, produce the meat for the market. It's a highly specialized production line business that keeps increasing by leaps and bounds.

Peterson has shipped his chicks to 36 states and to Canada, Mexico, Europe, Central and South America. As the chicks come out of the incubators they are graded and boxed. Since they can go their first 72 hours without food or water, air transportation has been the key to both domestic and foreign business. For example, a European order will be flown by Bonanza from Decatur to Kansas City in time to make a non-stop flight to New York and connecting trans-Atlantic flight. An enterprising young man in New York has built quite a business seeing to it that the chicks are cared for upon arrival and trans-shipped at once. Most European countries can get their chicks from 24 to 36 hours, well within the 72-hour limit.

The Travel Air was purchased this year to enable company executives to call on more prospects. Constantly increasing business has saturated the Bonanza use with deliveries. Peterson has three full-time salesmen and the company is studying the feasibility of putting them in business airplanes since they have found that the Bonanza is as cheap to operate as an automobile, mileage wise.

Peterson told us that the 960 hours put on his 1957 Bonanza cost him only $13.97 per hour, excluding depreciation. "That's real transportation economy," he said.

He's so busy with constant expansion of facilities on his beautiful 800-acre forested chicken ranch he doesn't do much piloting any more. Ray Ellis and Ronnie Ware of Fayetteville Flying Service do most of his flying and attend to hangaring and servicing. Major maintenance and 100-hour checks are done by Tulsair in Tulsa. Peterson scraped out a beautiful 2,600-foot landing strip right in front of his house on Crystal Lake. It is carpeted with Bermuda grass, has an electric fence around it, with a lighted runway and lighted wind sock. A few weeks ago a small military transport sat down on the field at night during some violent weather. The pilot was lost and said the strip was a "God-send." The strip is just 12 minutes flying time from Fayetteville.

"Every town in the country could have a strip like Peterson's for little or nothing," Ray Ellis commented while our photographer shot some pictures of loading operations. "The Unicom set is at the Peterson office downtown — about 3 or 4 miles from the strip. Think what it would do for general aviation if every town the size of Decatur (Pop. 400) had a deal like this!"

The trouble is that every town doesn't have a Lloyd Peterson and every nook and cranny of the nation doesn't have an aviation builder like Ray Ellis. But we couldn't help agree-

(Continued on page 64)

Lloyd Peterson (center), the chicken king, has bought a Bonanza a year for the last five years from Tulsair Distributors, Inc., and is shown with John Brownlee of Tulsair (right) and Ray Ellis of Fayetteville, Peterson's expert flight operations manager. Charter flights were used by Peterson until aircraft ownership was proved effective — his Bonanza and Travel Air will log some 2,000 hrs. this year.

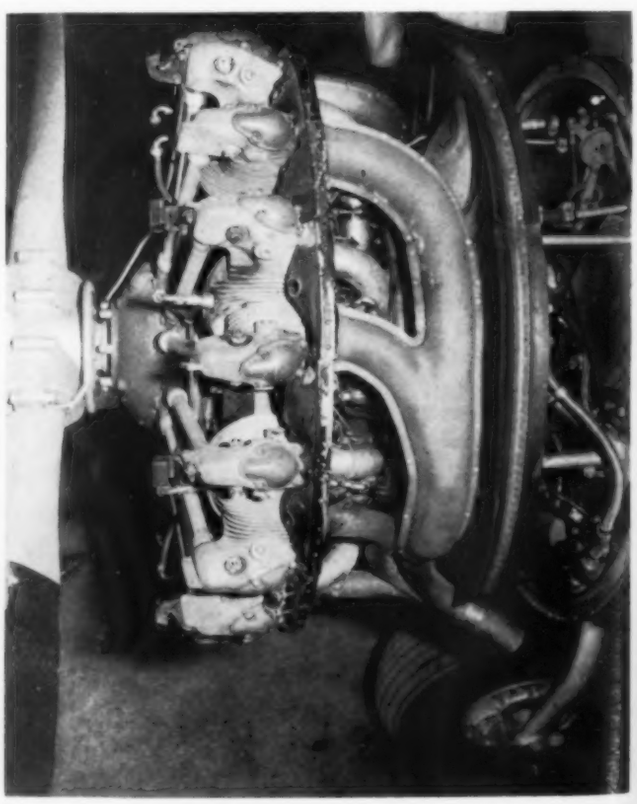
Beech Twins like this PacAero D-18 profit as much as 20 mph. in cruise, more payload at 9,000-lb. gross, improved rate of climb, more manifold pressure, better engine cooling with less drag and more fuel and range from new PacAero modification kits. —(FLIGHT MAGAZINE Photo.)

PacAero's Speed-Safety Kit

MODIFICATIONS to improve aircraft performance and safety are good investments when the degree of improvement is sufficient to pay actual economic returns in the form of more miles per dollar operating cost. That is why several different modification kits for the popular Beech C-18 and D-18 Twin have proved widely successful in recent years — owners of these old but classic designs figure the modifications pay for themselves while making the airplane a better and safer performer.

The latest Beech 18 kit is now being demonstrated throughout the country by PacAero Engineering Corp. of Santa Monica, California, which produces the famous Learstar and engages in many other significant aircraft modification projects. PacAero is designating dealers to handle its Beech kit and expects the kit to earn a large volume of business as more and more owners of Beech 18's seek improvements which will keep their airplanes in top-notch condition. Among other

Siamese short stacks and new ram air carburetor intake scoop of the new PacAero kit are pictured at left below, with the kit's new maximum-area stainless steel heat muff at right below.



PacAero short stacks exit in stainless steel trough which provides augmented exhaust of engine cooling air and minimizes exhaust system back pressure. Note cleanness of new ram air scoop. Landing gear doors are of improved, close-fitting design.
(FLIGHT MAGAZINE Photo.)

things, the PacAero kit is designed to increase cruising speed 20 mph. or 10%.

We were given a demonstration of the PacAero treatment when its demonstrator and crew, Bill Evans and Bill Hinkley, were on tour last month and operating out of Dallas Aero Service, a dealer for the program. Their demonstrator was a 1946 model, with big ADF loop and a full assortment of other drag-producing antennas hanging out in the breeze.

PacAero's deal comes in four units, or kits, as follows:

Kit No. 1 — Short stacks, improved oil cooling, improved carburetor ram air scoop and improved carburetor heat.

Kit No. 2 — Two Stewart-Warner 20,000-BTU combustion-type heaters, with electrical fuel pump for ground operation of cabin heater and cabin heater thermostatic controls.

Kit No. 3 — Improved wheel well doors.

Kit No. 4 — Stabilizer angle of incidence change.

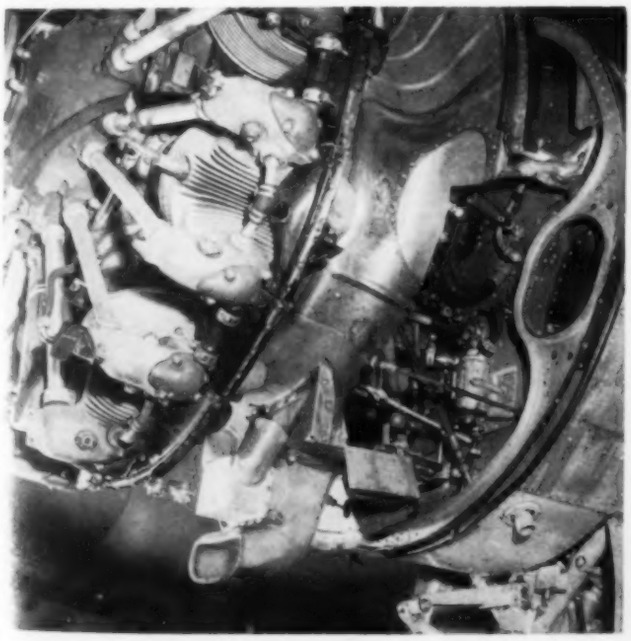
PacAero and its dealers say installation of the complete package of four kits provides an increase in cruising speed of 20 mph. Any of them will be installed separately, if desired. Installed all at once, the complete installed price is $9,750 and total down time is 12 working days. Installed separately, total price is $10,185, broken into kits as follows: Kit 1, $4,940; Kit 2, $2,895.40; Kit 3, $1,615 and Kit 4, $950. Kits 1 and 2 provide a cruising speed increase of 14 mph. and require a down-time of 10 working days.

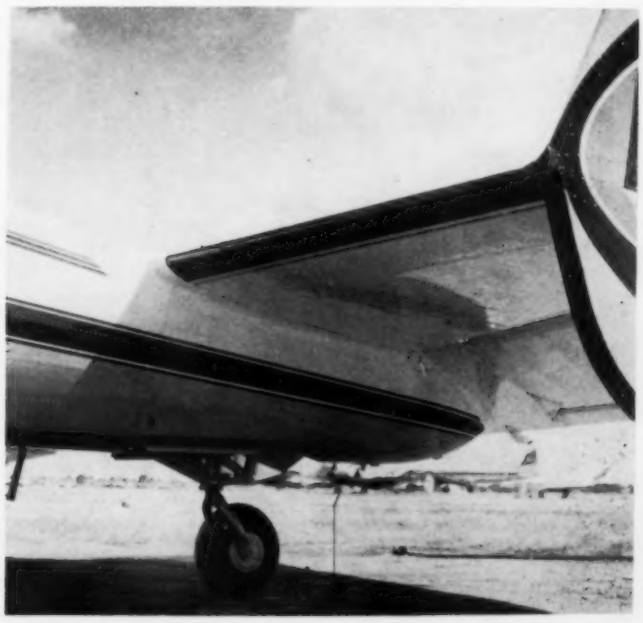
The power package modification results in an increase of about 285 lbs. in payload with gross weight upped to 9,000 lbs. under the kit's supplemental type certificate. PacAero says the new ram air scoop provides a 1¾-inch boost in manifold pressure using the same throttle setting as before. This reduces the power required to drive the supercharger and at the same time increases the power to the propeller. As a result, take-off critical altitude has been raised from 2,300 ft. to 3,900 ft. and rate of climb, especially at altitude, and cruise performance are improved.

New stainless steel Siamese exhaust stacks keep back pressure at a minimum, providing higher power output at the same manifold pressure and rpm. and reducing exhaust valve wear. The stacks exit through two stainless steel troughs in the lower cowl, augmenting the cooling air flow for better engine cooling and permitting an increase in METO power from 400 to 450 hp. Stainless steel heat muffs cover

(Continued on page 64)

Close-up below (left) shows modification in which long stack has been removed with new carburetor ram air scoop in place. Horizontal stabilizer angle of incidence (right) is changed a fraction of an inch to reduce drag for high speed and give improved stall characteristic.





Scheduled to make its first flight during September, here's the prototype for the new 4-place, twin-engine Mooney Mark 22. It is powered by 4-cylinder, 180-hp. Model O-360 Lycoming engines driving full-feathering, constant-speed Hartzell propellers.

Smallest Twin Ready For First Hop

A NEW lightweight, 4-place, twin-engine business plane — lightest multi-engine to be marketed — was being readied for its first test hop before October by Mooney Aircraft at Kerrville, Texas. Hal Rachal and Norm Hoffman, Mooney executives, are confident it will be as outstanding in its simplicity and efficiency as their 4-place Mooney Mark 20, identical components from which will be used in the twin's production.

Known as the Mooney Mark 22, the little 4-place twin is aimed at a 230-mph. top speed, a 210-mph. cruising speed using 75% horsepower, and a price under $30,000.

"We are confident of these goals for the Mark 22 and we believe early flight tests before October 1 should confirm the performance for which it was designed," commented Rachal. "As for the hoped-for price, we are faced with unknowns in the future economy of the nation and nobody can predict the economy with any accuracy. While we are now ready for flight, at least a year will be required for completion of all flight testing, certification and preparations for production — we do not expect to be ready with production until the latter part of 1960. But we hope to be able to hold the price below $30,000 because we believe the biggest market will be attracted by such a price."

The Mark 22 prototype is powered by two 180-hp. 4-cylinder Lycoming O-360 engines. It will gross 3,330 lbs. with a 2,100-lb. empty weight and a useful load of 1,250 lbs.

Total fuel capacity will be 100 gals., using 35 gals. each in wing-tip tanks and 15 gals. each in tanks located in the rear of the engine nacelles. Range of 1,200 miles is expected with this amount of fuel.

Design performance includes a top speed of 230 mph. using 180 hp. from each engine and 210 mph. using 75% horsepower, with a landing speed of 64 mph. Short-field performance of 500 ft. for take-off and 700 ft. for landing is planned.

Manual operation of retractable landing gear and flaps will be the same as with the single-engine 4-place Mark 20. These and other features provide simplicity of operation and minimum servicing and maintenance requirements for economical flying. The twin will use composite construction as the single-engine Mooney does — metal fuselage and plywood laminar-flow wing.

Mooney Twin is expected to cruise 210 mph. on 75% horsepower and have 1,200-mile range at economy power on 100-gal. fuel supply. Wing-tip tanks will carry 35 gals. each and nacelle tanks will carry 15 gals. each. Components are from 4-place Mark 20.

Airline communications and navigation equipment features this instrument panel in Wilcox Electric's Beech Travel Air demonstrator, which has a 120-lb. Wilcox Canari system. Wilcox panel with three control heads and ADF controller is to left of control console. Note multi-purpose cross-pointer instrument which combines compass deviation indicator, omni bearing selector, flag alarms for both needles, to-from indication, press-to-test marker light and relative heading pointer operated from gyro compass system at instrument's center.

Wilcox System For Travel Air

SUCCESSFUL marketing of the new light-twin designs to American business has created a transportation revolution within a revolution. The utilization factor has jumped by leaps and bounds because of the tremendous amount of instrument and night flying the twins are performing. All the airplane use surveys reveal this development which has even surprised the people who make and market the craft.

As instrument and night operations increase, so does the demand for absolutely reliable radio equipment, including more powerful transmitters, more frequencies and dual installations on separate and independent power supplies. While the pilot is ever conscious of weight and cost, the trend is toward the most perfect equipment for his particular needs with cost and weight considerations completely secondary to fool-proof reliability. After all, the reasoning goes, instrument flying today in high density areas not to mention the enroute requirements, calls for the very best in navigation and communication equipment. That's why we are beginning to see more and more light twins with the finest dual-ized radio equipment money can buy – often costing up to half as much as the airplane.

Typical of these quality installations is the Wilcox Electric Company's new Travel Air, now on a national tour under the captainship of veteran pilot-salesman, Orin (Moose) Redhead. Moose gave us an impressive demonstration of an ILS approach in which

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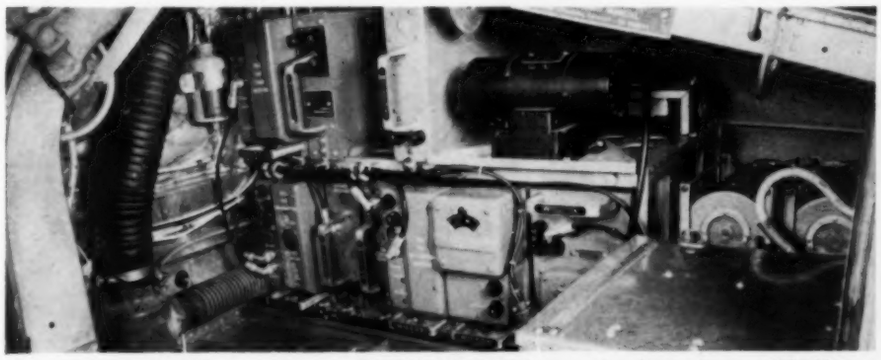
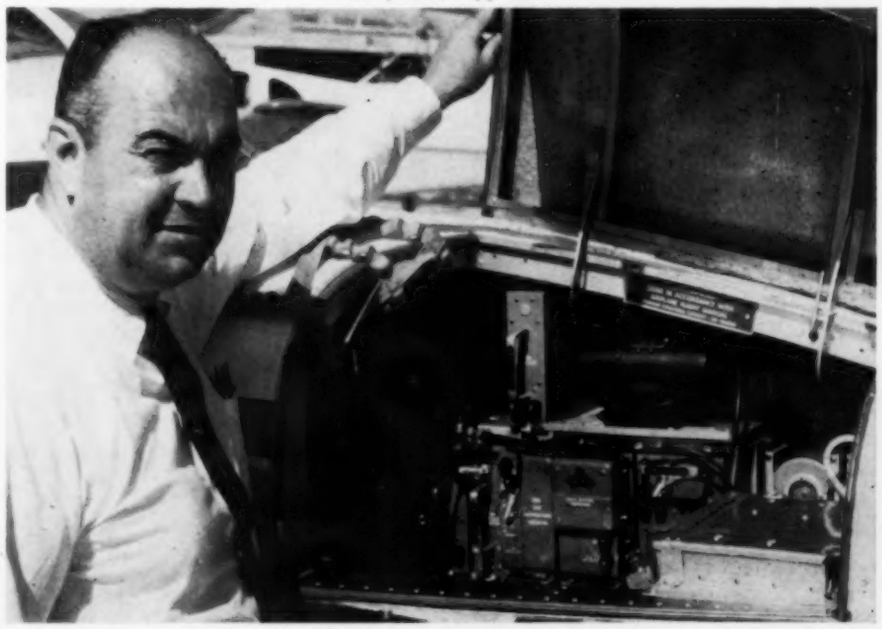


Compactness of Wilcox system in Travel Air nose is seen in these views, with Moose Redhead of Wilcox holding the nose door open. Equipment list includes 700B glideslope, 701A ADF, 702A marker beacon, 703A Cat (computing automatic tracker), 705A communications receiver, 706A navigation receiver with omni bearing indicator, 707A transmitter, 740A compass system (GE), 749 transistor speaker and amplifier, and power supplies.



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New LEAR (airline type) NAV

"Ye canna' find a better buy!"

TINA LEAR 3½ YEARS OLD

LEAR NAVCOM 100 is a completely new line of high quality, high performance, airline-type VHF navigation and communication equipment, readily adaptable to the ever increasing critical requirements of the private and executive aircraft.

Modular building-block flexibility permits step-by-step expansion by simply adding remote-mounted plug-in modules. Emphasis on design simplification has significantly increased reliability.

HERE'S AIRCRAFT RADIO AT ITS BEST—light weight, low cost, dependable, versatile—and it's CAA TSO'd—meets new CAB 58-5 IFR requirements.

NOW DELIVERING! For complete information see your local dealer or write direct to LearCal Division, 3171 So. Bundy Dr., Santa Monica, Calif. **LEAR**

COMPLETE "B" PACKAGE $1495

190 CHANNEL VHF RECEIVER
90 CHANNEL VHF TRANSMITTER
POWER SUPPLY—MODULATOR—AMPLIFIER
CONNECTORS—SHOCKMOUNT *
VOR/LOC/MARKER BEACON RECEIVER
VOR/LOC INDICATOR

COMPLETE "A" PACKAGE $1095

* (TRANSMITTER, RECEIVER, POWER UNIT, SHOCKMOUNT)

LC-54

COM 100

CAA TSO'D
meets new CAB 58-5
IFR requirements

240 channels capability

140 channels capability

LIGHTWEIGHT
"A" package 9 lbs.
"B" package 15½ lbs.

- BUILDING BLOCK ADD-ABILITY
- DIGITAL TUNING
- CRYSTAL CONTROLLED
- 4 WATTS
- AUTOMATIC SQUELCH CONTROL
- ILLUMINATED PANEL
- AUTOMATIC VOR/LOC/GS SWITCHING
- TRANSISTORS — ETCHED CIRCUITS
- PANEL MOUNTING

Add the new Lear TSO'd glideslope receiver including VOR/ILS indicator complete for **$795**

Here's new 560-channel crystal-controlled, 18-lb. DN-560 VHF navigation system with transistor power supply. Left to right, the $2,780 system's components are: Control; DNI-2 navigation indicator with rotatable azimuth, flag alarms, to-from, right-left and omni-ILS presentation; transistorized DNC-4 VOR/ILS converter, and DR-560 crystal-controlled receiver in short ⅜ ATR rack. DR-560 covers 108-135.95 mc, has own transistorized power supply and weighs only 9 lbs.

New Dare ADF And Radio Combinations

SIGNIFICANT new lightweight, compact communications and navigation equipment including a new ADF has been placed on the business aircraft market by Dare, Inc., which is now making deliveries of the CAA-TSO'ed items.

Dare's new equipment includes a DN-560 navigation system weighing only 18 lbs. and featuring transistorized power supply, crystal-controlled 560-channel receiver, omni converter, navigation indicator, control unit and shockmount. It is priced at $2,780.

A new Dare DADF-1 automatic direction finder system features 6 transistors, 8 tubes, compact dimensions for mounting in a short ⅜ ATR rack and weighs only 18.75 lbs. It sells for $1,975.

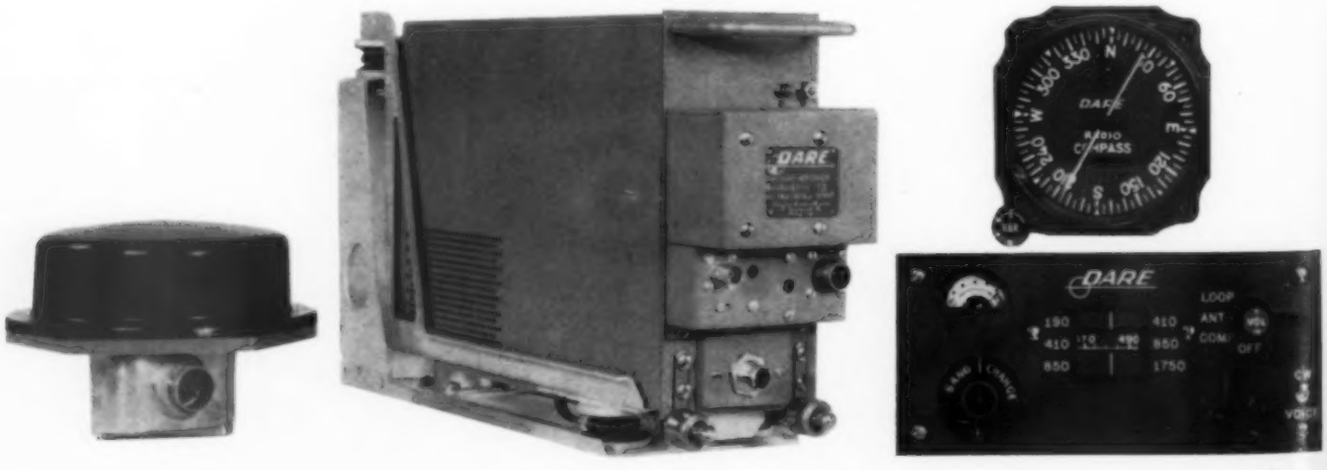
A third new Dare equipment is its compact Model 90C transceiver single-unit package which weighs only 7.2 lbs. and fits a standard glove compartment but includes (1) a crystal-controlled 90-channel, 4-5 watt transmitter, (2) tunable receiver with tone (whistle) tuning for accuracy, (3) aural marker beacon and (4) transistorized power supply and modulator. It has an edge-lighted plastic panel and sells for $845.

The Dare 90C is also available as a Model 90CR for remote installation. To both the panel-mounted and remote unit can be added complete navigation services with a transistorized DNC-4 omni-ILS converter and a DNI-2 indicator with omni, localizer, flag alarm and rotatable azimuth.

Interesting details on all of the new Dare CAA-TSO'ed lightweight equipment are as follows:

Dare DN-560 Navigation System: 18 lbs., 14 or 28 volt dc, 3.6 or 1.8 amp drain, crystal tuning, 560 channels from 108 to 135.95 mc, transistorized power supply, short ⅜ ATR,

Dare's new DADF-1 automatic direction finder system (below) weighs only 18.75 lbs. complete, has own transistorized power supply and uses no high voltage. Components, left to right, are sealed loop antenna with loop drive from an AC transistor supply; tuner-amplifier unit in short ⅜ ATR rack; DNI-3 indicator unit and remote control panel. The tuner-amplifier unit utilizes transistors to save weight, space and current drain, incorporates new 12-volt-plate tubes and requires no high-voltage supply. Indicator has rotatable azimuth. Control head is back-lighted with band selection performed electrically while tuning is by precision-gear flexible shaft. DADF-1 sells for $1,975 complete.



Test your cross-country memory

Can you name this airport?

Clue: *the citrus fruit center it serves is the spring training site of the Washington Senators baseball team. (Answer below)*

Now test your aviation oil memory: Do you remember the two important reasons why Gulf oils are better for your engine?

1. In addition to providing efficient, thorough lubrication, Gulf aviation oils help keep engines *clean*—and safe!

2. Gulf-clean engines can go longer between overhauls, because there's less wear and tear on engine parts.

Choose either new Gulfpride Aviation Oil Series D, the detergent oil, or Gulf Aircraft Engine Oil, the straight mineral oil—both keep your engine Gulf-clean and safe.

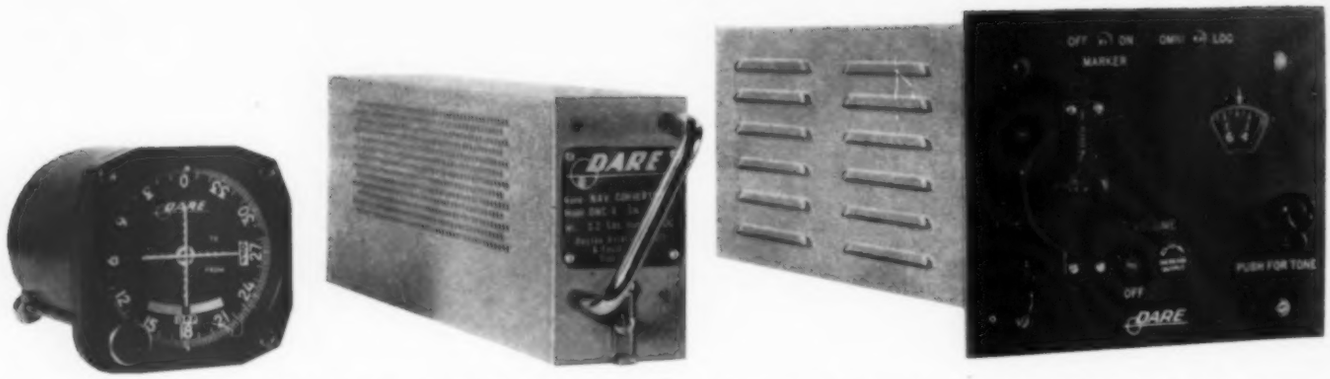
The airport pictured above is the Orlando, Florida Municipal Airport, two-and-half miles east of the city. It has five paved runways, the longest of these being 5,500 feet.

Here you'll find friendly Gulf service under the supervision of Howard Showalter, president of Showalter Flying Service.

GULF

AVIATION PRODUCTS

Fly safely with a Gulf-clean engine



These three small units make up a lightweight Dare Communications-navigation package weighing less than 14 lbs. Left to right are 3.4-lb. DNI-2 VOR/ILS navigation indicator; 3.2-lb. transistorized DNC-4 VOR/ILS converter and glove-compartment-mounted, 7.2-lb. Dare 90C transceiver, which has its own transistorized power supply, 90-channel crystal-controlled, 4-5-watt transmitter covering 118-127 mc and tone-tuning receiver covering 108-128 mc. DNI-2 indicator is $590, DNC-4 converter is $450 and 90C transceiver is $845, total package being $1,885.

$2,780. This system consists of a DR-560 receiver, a DNI-2 navigation indicator, a DNC-4 converter and shockmounts and control.

DR-560 Receiver: This receiver tunes from 108 to 135.95 mc providing VHF omni, ILS and communication channels with 50-kc separation and employing 48 crystals to tune all 560 channels. It includes a new positive acting squelch circuit and may be used with the proposed ATC transponder system. DR-560 weighs only 9 lbs., has transistorized power supply and is priced at $1,500.

DNI-2 Omni-ILS Navigation Indicator: Includes left-right, to-from, two flag alarms and glideslope presentation in standard 3⅛-in. instrument. It has ARINC resolver instead of potentiometer for maximum accuracy. Weight is 3.4 lbs., price $590.

DNC-4 Omni-ILS Converter: Completely transistorized with 18 transistors, 5 diodes and 2 diode voltage regulators. It weighs only 3 lbs. 4 ounces and requires only 100 milliamperes of battery current (0.1 amp) at 28 volts exclusive of relay current. It has outputs for 3 deviation indicators, 2 flag alarms and 1 to-from indicator. Price is $450.

DADF-1 Automatic Direction Finder: Complete system consists of a tuner-amplifier unit, a remote control panel, an indicator, a directional loop antenna plus installation accessories at a total weight of only 18¾ lbs. It uses no high voltage, all filaments and plates being 12 volts, with 3-amp current drain at 28 vdc (also available for 14-volt operation). It has transistorized power supply. Frequency coverage is 190-410 kc, 410-850 kc and 850-1750 kc. Complete system mounts in a short ⅜ ATR rack. Control unit tuning is by precision-geared flexible shaft. The system's indicator was designed to benefit from readability research with indications given in 5-deg. increments and cardinal points clearly lettered. Rotatable azimuth facilitates precision navigation without mental computations. New Dare sealed loop antenna employs a ferrite core for maximum sensitivity in the smallest size, with loop drive from an AC transistor supply.

Dare 90C Transceiver: Glove compartment unit consisting of 90-channel, 4-5-watt, crystal-controlled transmitter covering 118-127 mc; tone-tuning (whistle) tunable receiver covering 108-128 mc; aural marker beason; transistorized power supply, and edge-lighted plastic face plate. It weighs only 7.2 lbs. and is priced at $845. Remote version with backlighted control head is priced at $1,020 and weighs 8.3 lbs.

Other Dare equipment also meeting CAA-TSO requirements for unrestricted instrument operations includes a DTR-360A transceiver featuring crystal tuning to cover 360 channels from 118-135.95 mc with 15-watt transmitter, available for 14 or 28 vdc. It mounts in a ½ ATR rack, weighs 23.5 lbs. and is priced at $2,875.

The new DN-560 navigation system, DADF-1 automatic direction finder system and Model 90C transceiver with accessory units provide Dare with a complete line for the first time, all of the items meeting CAA-TSO requirements. The company, based at Troy, Ohio, expects to expand its share of the business aircraft radio and electronics market with the newly-completed line of top-quality products.

Designed for glove-compartment-mounting and complete with transistorized power supply, this is Dare's new Model 90C VHF transceiver with aural marker beacon, edge-lighted plastic face, digital control head for crystal-controlled, 4-5-watt, 90-channel transmitter and tone-tuning receiver. Its transmitter covers 118-127 mc, its receiver 108-128 mc. Dimensions are 4⅝ by 6⅛ by 10⅛ inches and weight is only 7.2 lbs., with 14 or 28-volt versions available. A remotely-mounted version is also available. This, as well as all of the new Dare equipment, meets CAA TSO requirements and 90C transceiver is priced at $845.

Temco
AIRCRAFT DALLAS

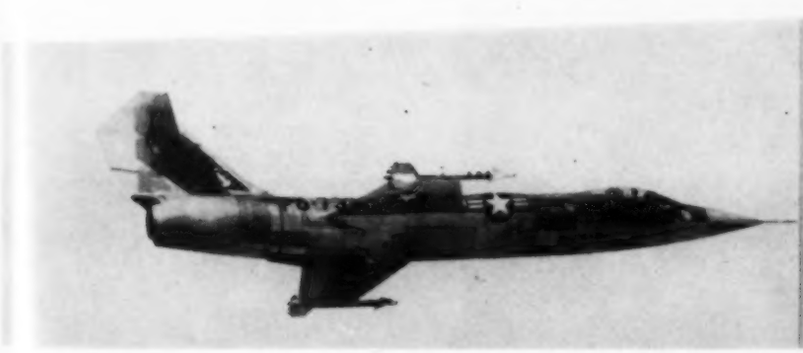
Giving Wings to New World Records

A razor-winged streak, the USAF Lockheed F-104A Starfighter has carved out a double-edged victory for American airpower. Climbing 17 miles "straight up," the Starfighter set a new world's altitude record of 91,249 feet. And this winged-victory, American style, has also set a new world's speed record of 1,404.19 mph . . making it the fastest operational fighter in the world today.

Temco Aircraft Corporation produces the wings for this ultrasonic space craft . . amazingly thin . . exceedingly short wings with a razor-sharp leading edge. To resolve the problem of attaining high lift with this very thin wing, both the leading edge and the trailing edge are fitted with flaps. Sharp wing leading edges and control surface leading and trailing edges are machined from solid stock.

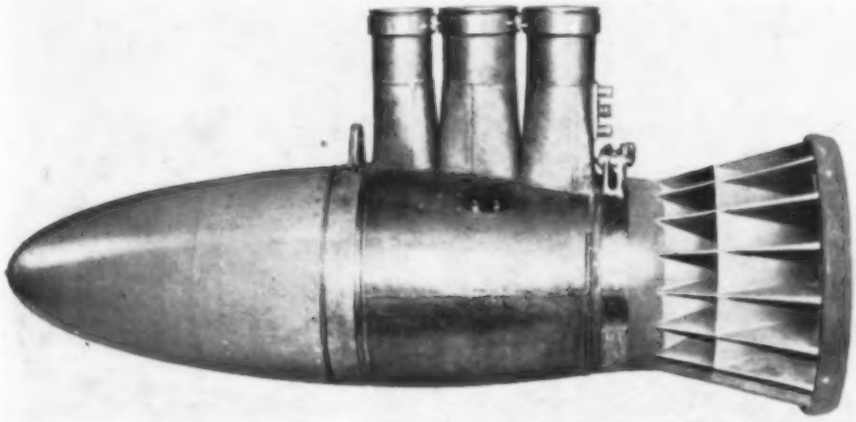
Production of the F-104's wings calls for extreme precision and highly specialized talent in the art of sculptured skins . . a capability Temco possesses along with many other unusual capabilities for serving the new space craft industry. Altogether Temco produces 8 proprietary systems and major components for 16 of America's first line weapons systems.

Temco's work in advanced metallurgy, in titanium, aluminum, austenitic steel, stainless steel . . in metal bond and reinforced plastic structures and other non-metallic high temperature materials development is typical of Temco's continuing progress. With its design support capabilities encompassing complete weapons systems management, Temco is on target for a sound future in the challenging new space age.

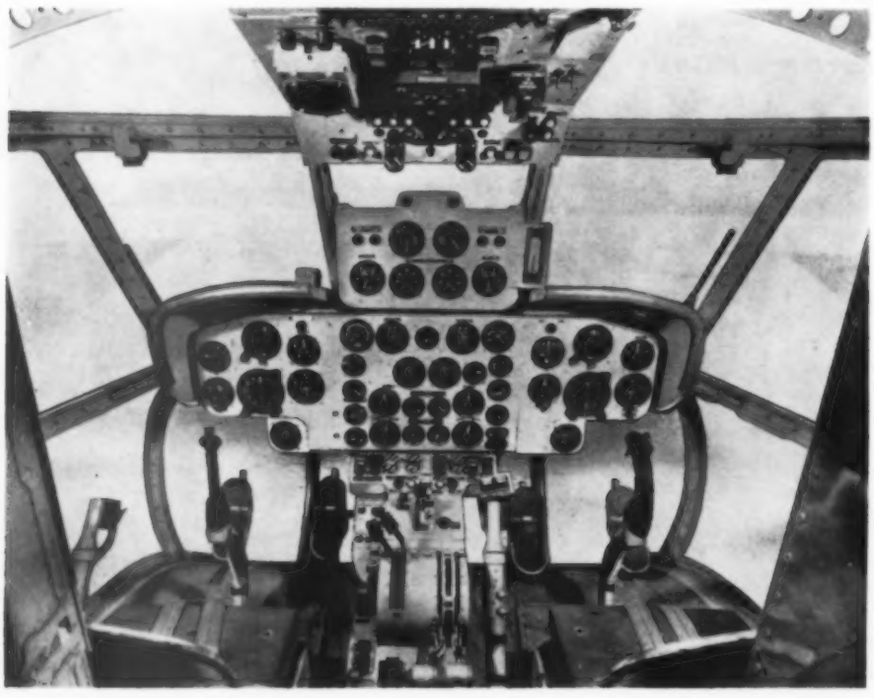


TEMCO
AIRCRAFT CORPORATION • DALLAS, TEXAS

Fairey Rotodyne uses four 1,000-lb.-thrust pressure jets at its rotor tips for vertical landing and take-off as a helicopter. Forward flight at speeds up to 185 mph. is powered by two 3,500-hp. Napier Eland turboprops.



Close-up of tip-mounted pressure jet shows its compressed-air and fuel intakes and silencer-equipped exhaust. Cockpit (below) is designed for downward visibility in vertical take-off and landing operations.



Kaman To Sell British VTOL Airliner In U.S.

THE world's first vertical take-off and landing turboprop airliner, Fairey Aviation Company's British-developed Rotodyne, will be offered to commercial and military users in the United States by Kaman Aircraft Corporation of Bloomfield, Connecticut, under a licensing agreement for manufacture of the Rotodyne as well as sales

Comparable to the Convair in size, the 36,000-lb. Rotodyne can carry 48 passengers with its 12,000-lb. payload and has a 185-mph. cruising speed which exceeds that of any helicopter. Its high-speed fixed-wing speed capabilities are combined with its rotary-wing vertical take-off and landing so that it can operate in and out of confined city-center areas as a helicopter, eliminating ground transportation to and from outlying airports.

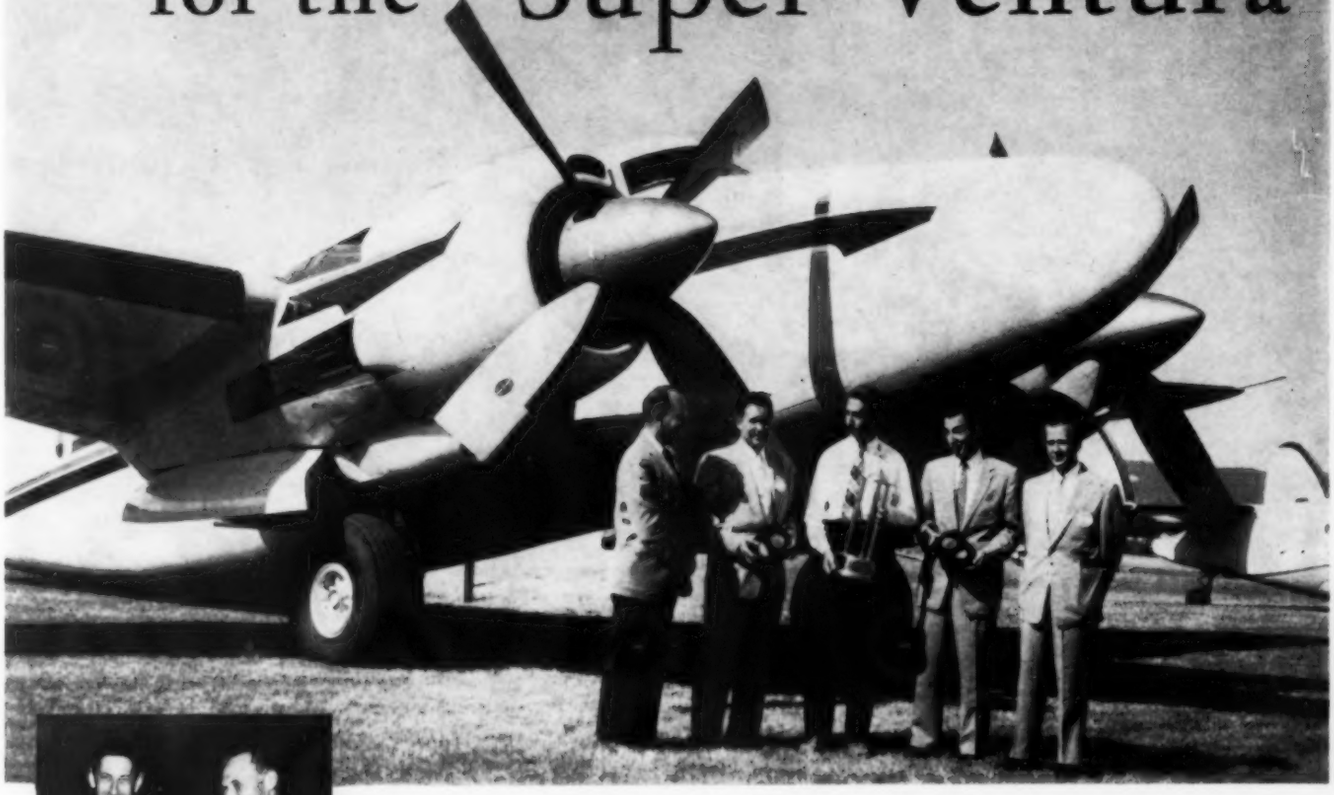
Considered as the answer to many short-haul airline problems, the Rotodyne features multi-engine safety factors for full instrument flying operations. Its rotary wing is powered by tip-mounted pressure jets of 1,000 lbs. thrust, each, giving the 4-bladed rotor a total of 4,000 lbs. of thrust. Two 3,500-hp. Napier Eland turboprop engines.

Called tip-burners, the pressure jets on the tips of the 90-ft. rotor are supplied with compressed air from the two Eland turbines. This air is mixed with kerosene fuel and burned in the tip jets. Pressure-jet tip-burners eliminate mechanical power transmission for the rotor.

For helicopter flight, all lift is provided by the big rotor. For high-speed airplane forward flight, the rotor is unloaded to relieve most of its lift and drag, with most of the lift transferred to the craft's stub wings and propulsion to the two turbine propellers. The Rotodyne has successfully demonstrated its outstanding capabilities in many test flights.

Another Aviation Triumph

for the Super Ventura



At the recent ninth annual RAS meeting in Reading, Pennsylvania, the National Distillers and Chemical Corporation Howard Super Venturas, N100P and N200P, received four out of five of the top awards among the twin-engine aircraft. Harold Curtis, of National Distillers, is shown receiving a trophy from Sime Bertolet, President of Reading Aviation Service.

Howard Super Ventura

WINS COVETED READING AWARD

as "Flagship of the Fleet"

Winning four out of the five awards for executive twins over 12,000 pounds at the Reading Aviation Show, the Super Ventura is being recognized more and more as the most outstanding airplane for executive transportation.

Since its introduction, Super Ventura aircraft have flown over 30 million passenger miles. Not one Super Ventura put into executive service has been involved in a mishap resulting in injury to a passenger. Few aircraft can make this claim, let alone match the speed, range, comfort and versatility of the Super Ventura.

Howard Aero INCORPORATED

MANUFACTURING DIVISION

P. O. BOX 8247 • SAN ANTONIO, TEXAS

This puzzled flying hunter studies in awe the most mammoth tracks he ever saw. They were made not by any abominable snow man but by a giant Alaska brown bear. The snow, covered by gray volcanic ash, betrays the bear tracks in glistening white everywhere he steps. These tracks can be spotted from miles away. For a portrait of the bear which left them, note photo at bottom of page. In same ash-covered snowfield, a pack of wolves left the track shown at left. Wolves follow a leader, making a single trail.

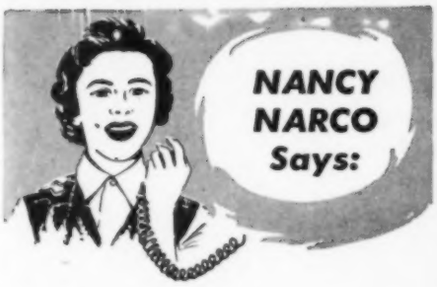
Ward Gay, Anchorage guide, outfitter and bush-flying operator, is seen above studying trail left by a pack of wolves. Tracked into new-fallen snow up the slope, the big brown bear below is a giant whose skin measured over 10 by 10 ft. Note huge head and powerful arms. Well-placed shot felled him as he stood erect to face proud marksman.

Big-Game Fly-In

SEPTEMBER brings snow to the higher elevations in the Northwest and with them the annual invasion of big-game hunters, many in private planes. Flying reduces the time spent in transit, permits more time on the trail or in camp, and opens to air travelers areas not served by public transportation. So September is the big-game fly-in throughout the wilderness areas.

All big-game hunters find more than game in the great outdoors and they use it for reasons other than mere target shooting. Nature's out there — the country is big, open, unspoiled, awe-inspiring, invigorating, challenging and just plain wonderful in every way possible. There's much to the hunter's liking in being with a favorite and experienced guide, too — sit yourself down amidst the pristine wilderness without a guide and you're lost in more ways than one. But with him the whole panorama of nature's mysteries and God's intricate plan for life open up in fascinating detail. A compass will locate the novice and hired hands can do his work in the wilderness but a good guide provides much more — he's a specialist in teaching and coaching the common-sense way, a champion of practical methods instead of theory, a lover of wildlife who literally thinks like an animal and would rather nurture and protect the balance of nature than wantonly destroy it. A guide is the key to what every big-game hunter travels, works and sometimes suffers to locate in the wilderness — a trophy specimen, rarely found by chance and available only through painstaking skill in selective pursuit and marksmanship.

The September and May gathering



Dear Friends:

This new

Mark V

has me

speechless!

See it for yourself!

Nancy

NARCO • Fort Washington, Pa.

narco mark V

90-CHANNEL TRANSMITTER
190-CHANNEL RECEIVER

Crystal-Controlled! for only $998

Here's the biggest news in aircraft communications ever! Narco proudly announces the new Narco Mark V, an all-channel VHF transmitter and receiver with 90 crystal-controlled transmitting frequencies—*every channel in use between 118 and 126.9 mc*—and a 190-channel crystal-controlled receiver—*every channel in use between 108 and 126.9 mc!*

Never before has such an all-channel, all-purpose unit with airline-type crystal tuning been offered at anywhere near the price of the Mark V. Don't buy any VHF communications equipment until you've seen and worked this sensational unit—another addition to Narco's famous line of dependable, reliable aircraft radios.

You'll like these features of the Mk V

CROSS-CHANNEL OPERATION. Separate transmitter and receiver selectors give you complete flexibility of operation—simplex, double-channel simplex, cross-channel.

VOR/ILS NAVIGATION. Crystal-tune *quickly, positively* any VOR or ILS localizer frequency. Narco VOA-3 Omni converter with panel-mounted indicator can be used with Mark V to provide complete VOR/ILS navigation system.

EXTRA LARGE NUMBERS permit easy-to-read frequency selection. Perfectly back-lighted for night-time use.

VARIABLE SQUELCH. Tunes out distant stations, extraneous noise. Provides crystal-clear reception.

TRANSISTOR-TOROID POWER SUPPLY adds to dependability, saves weight, reduces power drain.

FIVE WATT TRANSMITTER gives you good, dependable long-range transmission every time.

COMPACT, LIGHTWEIGHT. Only 3" high, 6⅜" wide, 12" deep, weighs less than 10 pounds, complete with separate power supply.

See the Mark V at your Narco dealer's or write for brochure.

narco

NATIONAL AERONAUTICAL CORP., FORT WASHINGTON, PA.

A whole lot of fine bearskin rug is the prize this sportsman bagged when Ward Gay landed him within walking distance of the huge target. Lightplane on skis was then taxied up close for the picture.

spot for the most discriminating of all flying big-game hunters is Alaska, America's last frontier and home of bear, caribou, moose, sheep, goat, wolf and other trophies unmatched by any hunting ground in the world. Many flying sportsmen have been enjoying Alaska's superior hunting for years but more will begin participating in the big fly-in there with statehood for the sprawling territory which reaches far into the frozen Arctic on the north and the desolate waters of Asia on the west.

The pictures on these pages show a few samples of big-game hunting in Alaska, where the airplane has replaced the dogteam as the primary mode for travel. They are from snapshots made by a well-known Anchorage guide, outfitter and bush aircraft sales and service operator on the Anchorage International Airport, Ward Gay. We borrowed them from Ward for presentation here after spending a few wonderful hours in his home in Anchorage gawking at movies depicting numerous big-game hunts guided by Ward. He supplied a running commentary for the incredible scenes on the screen and it was almost as if we were on the hunt with him. We gained a new understanding and appreciation of the wilderness as he unfolded its secrets.

Will statehood mean too many hunters and depletion of game? No, says Ward, because there is more game in Alaska now than ever before and sensible enforcement of conservation regulations will keep it plentiful. Bounties on wolves have caused many to be killed, thus reducing the biggest threat to game and allowing caribou herds, for example, to build up significantly. Big Alaska wolves kill game not for food alone but wantonly. These 150-lb. predators stand 40 inches high and have super-animal strength and physical resistance. They have been known to escape with multiple gunshot wounds, making repeated kills of game along lengthy blood-marked escape trails. A raiding wolf pack gorges far beyond an animal's normal appetite, actually becoming woozy or drunken-like when overfilled but then disgorging whenever convenient to make another kill and repeat the process for hours on end.

Hunts are made with two airplanes, especially over ice floes for polar bear, because damage to a single plane could mean hazards in the absence of assistance. Polar bears are spotted from the air while flying low. Once a plane spots a bear, a landing is made as near as possible on the sea ice. This is generally hummocked with dangerous pinnacles which make a smooth and straight landing path difficult to find. Landing close to the bear is necessary so that a break-up won't separate the hunter with his bear from the airplane. Bears don't run from a landing plane — they stand their ground, watch it land and then approach it. So the kill is usually right at the airplane.

On a single hunt it is possible to bag a trophy each of polar bear, brown bear, caribou, moose, wolf and other species, for the airplane enables the guide and hunter to cover great areas. Bad weather is waited out, especially during white-out conditions of high winds and blowing snow.

Gay supplies complete equipment and clothing for the hunter and walking is held to a minimum because his planes land close by choice game areas — most walking and climbing comes when going after sheep and goat, which are found in difficult, almost inaccessible areas. No game is shot from an airplane but wolves are shot from a low pass at about 35 feet, the gun "leading" the wolf in reverse with the aim just behind the animal's tail so that the overtaking charge catches the wolf's head.

Because bad weather is waited out in camp, the actual hunting is in pretty weather without much wind and usually with a warm sun, so that the hunter is comfortable in a wool shirt without heavy outer clothing, even on snow-covered mountainsides. Ideally, 14 to 21 days should be allowed for a full hunt.

The only trouble with Alaska big-game hunting with airplanes is that booming business for bush flying operations might eventually make it difficult to obtain a guide with planes. Oil and mineral exploration activities are increasing and are taking more and more airplanes, pilots, guides and outfitters to meet the demand. But dyed-in-the-wool guides like Ward Gay will always be making room for avid big-game hunters who like the wilderness and appreciate the privileges it offers those who would enjoy its rich bounty.

★ ★ ★

NARCO SCORES ANOTHER IMPORTANT BREAKTHROUGH

ALL-CHANNEL

Sapphire

1016A

VHF RECEIVER-TRANSMITTER

with TRANSISTORIZED POWER SUPPLY

SAPPHIRE 1016A IS CAA TSO'd for scheduled airline use. Unitized construction permits rapid disassembly and unusual accessibility for servicing. Panel-mounted control switches provide crystal controlled frequency selection for SCS, DCS, or random cross-channel operation. Provision included for simultaneous channeling of glide slope receiver when used for ILS. Unit weight 22 pounds; antenna 3.5 pounds.

SAPPHIRE 1021 90-560 CHANNEL VHF RECEIVER. The receiver unit of the 1016A is now offered as a separate all-channel receiver with transistorized power supply in a short-height ½ ATR unit. When coupled with VOR/LOC converter, permits rapid, precise crystal controlled tuning to all NAV as well as COMM frequencies. Designed especially for the remarkable "2½ Sapphire" system, that gives unusual NAV/COMM flexibility and rapid switching of functions to relieve cockpit load.

TRANSISTORIZED POWER SUPPLY reduces weight of 1016A by 4 pounds, length by 3½ inches, is nearly twice as efficient as equivalent dynamotor units. With no moving parts, malfunction is virtually eliminated. Thoroughly proved in thousands of hours of flight and accelerated laboratory testing.

MORE POWER, LIGHTER WEIGHT, SMALLER SIZE AND EVEN GREATER RELIABILITY have been engineered into this new Sapphire 1016A VHF communications unit. Thanks to the development by Narco of a revolutionary transistorized power supply, this latest addition to the popular Sapphire series of airline-quality equipment is more than ever the logical choice for airlines and executive aircraft users for an all-channel VHF communications unit.

The Sapphire 1016A provides you with a 90 to 360-channel transmitter with greatly increased power covering every channel with 50 kc spacing between 118 and 135.95 megacycles; and a 90 to 560-channel receiver covering every frequency from 108 to 135.95 megacycles, with the all-important advantage of permitting crystal controlled tuning to VOR/LOC navigation frequencies.

Sapphire 1016 series equipment is in scheduled airline use, has been re-specified for the U. S. Air Force's Cessna L-27's and is in use in hundreds of corporate aircraft.

You'll select the Sapphire 1016A because it provides you with all-channel transmission, all-channel reception both NAV and COMM, because it's years ahead in design and reliability, because it's CAA TSO'd for airline use and because it's sensibly priced. See your Narco dealer or write for new brochure.

narco

National Aeronautical Corporation, Fort Washington, Pennsylvania

MARK OF THE FINEST COMMUNICATIONS

Sapphire 1016A

90/360-CHANNEL TRANSMITTER
90/560-CHANNEL RECEIVER

SNOW CROP PLANE

(Continued from page 27)

S-2B which can carry a 2,500-lb. hopper load. The S-2A is priced in the $6,000 bracket less engine and propeller but including their installation for buyers who furnish their own engine and prop. Price including engine and prop is less than $8,000. The S-2B is approximately $1,500 more including 450-hp. engine and prop, or less than $10,000 for the complete airplane.

"I figure these are bargains," Snow says and his orders confirm. "I can sell at such prices because I have stayed small and have kept development costs down as low as possible by not incorporating and rushing into production tooling expenses.

"It took me a couple of years to get going with my first airplane, the S-1, and then I put in five years of dusting with it to prove my design and to earn enough money to keep up the development," Snow explained. "I reckon I piled up almost 2,000 hrs. of dusting in Texas and Nicaragua to earn enough to keep going, doing my work on the S-2 between dusting seasons."

Last January some businessmen at Olney, Texas, flew several hundred miles to Harlingen, Texas, where Snow was struggling to get over the hump after perfecting his design. A town of 4,400 population, Olney had an airport but no payrolls on it and to move young Snow and several truck loads of airplane bits and pieces onto its airport and thus gain a payroll, its businessmen went all out. They signed personal notes to help the project. A public subscription was started for the "Olney Industrial Foundation." While the notes made available a $50,000 line of credit, the public fund swelled to $50,000 for the new plant. This was no stock-promoting deal by Snow. He remains as owner of the company, which is pledged to pay its way with the proceeds from each airplane delivery.

Orders with deposits began rolling in when Snow demonstrated his S-2 last February at the annual agricultural aviation conference at Texas A & M College, attended by operators from all over. Upon completion of the plant this fall, Snow will produce two airplanes a week, building up a work force of people to be hired in Olney and trained for the work. With $400,000 worth of airplanes to be delivered, Snow Aeronautical looks for sales and production to reach the million-dollar point in a couple of years.

Both versions of the S-2 are identical except for choice of power plant, with the pilot seated up front ahead of the load in the S-2A and behind it in the S-2B. Snow describes the two models and their performance as follows:

"The 450-hp. version carries an even ton of payload with ease and will carry as much as 2,500 lbs. in the hopper with a reasonable degree of safety. This is more than the airplane weighs empty. In 100-deg. heat, with no wind and at sea level, this airplane with 2,500-lb. hopper load will break ground in 1,650 ft., climb at 500 fpm. and make dusting turns in 45 secs. With 2,000 lbs. in the hopper, turns can be shortened to 35 secs. and ground run is 1,250 ft. With a 1,000-lb. hopper load, turns are made in 23 secs. Cruising speed is 105 mph. but its aerodynamic cleanness permits 80-mph., cruising on only 11.5 gals. of fuel per hour.

"The 220-hp. version, being 400 lbs. lighter, makes even faster turns — about 21 secs. with a 1,000-lb. hopper load. It will carry a 1,500-lb. hopper load for average sea level conditions, cruise 95 and land at 38 mph. empty.

"Both versions are all-metal with a virtually crash-proof welded-steel tube structure for the fuselage frame. The skin is removable for cleaning. Both versions feature an almost instant change-over system from dust to spray. Unlike some change-over systems, the S-2's do not carry the extra weight and drag of the spray system while dusting or the dust spreader while spraying, since these items are instantly detachable."

In proving up his design, Snow personally put out some 2,000,000 lbs. of insecticide in Texas and Nicaragua and is sure of his airplane's capabilities. Empty weights are 2,470 lbs. for the 450-hp. version and 2,030 lbs. for the 220-245-hp. version. CAA-certificated gross weight for them is 3,460 lbs., but agricultural operators are authorized to load at their own discretion and Snow's load-carrying performance figures are for overload gross weights of 5,460 lbs. and 4,200 lbs., respectively. Span is 38 ft. and wing area 285 sq. ft.

"The S-2 is just what the ag operator has been looking for — our actual work and demonstrations have proved that," young Snow says. "We can keep the price down — we have got to, because the average operator can't afford to invest more than about $10,000 in an airplane. I know — I've been sweating it out myself."

JUST AMONG OURSELVES

(Continued from page 17)

ing recent weeks a rumor was rampant from coast to coast that Chance Vought Aircraft was casting about for a new home. It seems that their facilities had been taxed by the city of Dallas to the tune of an unprecedented $200,000.

We paid little attention to the rumor until we began to get letters and phone calls from as far away as California. Chance Vought spokesmen were finally forced to issue an official statement. In all clarity it says:

"This is strictly a rumor. It is not true."

While the $200,000 seems to us like an exorbitant local tax bite on a government-owned facility which provides the major payroll in a community, we're not tax experts and are in no position to comment intelligently on the subject. But we do bemoan the fact that rumor mongering in aviation has hit a new low. With more than $14 million invested in their Dallas facility it would take more than a $200,000 tax bill to force a move.

"You Never Can Tell"

TULSAIR Distributors' John Brownlee cast about last February for an old Travel Air to use in connection with the advent of Beechcraft's new twin bearing the same name. One result of his research was the following letter which in mighty few words sums up aviation progress in the past 30 years:

"I received your letter concerning the use of my 2000 OX5 Travel Air. I don't know if you ever flew this type plane or not but it is quite a problem to get them from place to place safely. Also this time of year it will be rather cold and perhaps ice or snow. However I am willing to try it at $500. This may seem high to you but I want you to understand circumstances. If I should have a forced landing and damage it, it would cost me more than I could make out of it. These planes are very scarce and I take the best care of mine.

"If you are interested and decide to use it let me know and I'll do my best to get there. Would there be a grass spot I could land on as it has a tail skid and no brakes but uses very little space to land. I will have another ship follow me as I would not chance flying it alone. He will carry tools and some extra parts.

"We had a good trip to Wichita and back with no trouble. Averaged 65 mph. ground speed. I have a new OX5 in the plane but you can never tell about them. If interested let me know as soon as possible as it takes planning."

And you think we have problems today?

When Time Counts.....

YOU CAN DEPEND ON REED FOR ON-TIME DELIVERY OF YOUR AIRCRAFT

The leading business firms of the nation have relied on the J. D. REED COMPANY for over 25 years for the best in aircraft service, maintenance and overhaul.

And Here's Why—

REED'S *Maintenance and Overhaul Shop*

. . . is one of the nation's most modern and complete facilities . . . equipped to handle any job with tools designed for each specific purpose . . . and skilled know-how that comes from long specialized service on all types aircraft.

REED'S *Radio and Electronics Shop*

. . . is a miracle of efficiency with trained technicians to install and service the world's finest navigation and communication systems . . . complete testing facilities are available to check and prove equipment accuracy.

REED'S *Stock of Parts and Accessories*

. . . is maintained at levels to provide a ready availability of all parts that go into any workorder . . . parts and accessories stocked by the J. D. Reed Company are factory approved and fresh from the manufacturer.

REED'S *Engine and Propeller Shop*

. . . is staffed with specialists with an intimate knowledge of their job . . . whether the job is trouble shooting or an engine or propeller installation our detailed attention will assure safe and efficient performance of your aircraft.

With the J. D. Reed Company it's ON-TIME DELIVERY everytime. We invite you to visit our shops to see why we can better serve your aviation needs. You will find us anxious to serve you.

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HERE'S THE SIGN OF THE FINEST SERVICE FOR YOUR PIPER AIRPLANE

Piper has established a world-wide network of Factory-Certified Service Centers to assure you of the finest service possible for your Piper airplane.
To earn the coveted designation, service organizations must meet rigid requirements, must be properly equipped and staffed by personnel who have attended the intensive service school conducted at the Piper plant.
Dozens of Piper Factory-Certified Service Centers have been established throughout the nation and around the world, and more are being designated to assure convenient and competent Piper service wherever you may wish to fly.

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BRidge 5-5741
Phoenix, Arizona

AVIATION SPECIALTIES COMPANY
Gallup Municipal Airport
P. O. Box 1241
UNion 3-3621 *UNion* 3-5394
Gallup, New Mexico

BROWNING AERIAL SERVICE
Municipal Airport
P. O. Box 1173
HOmstead 5-1728
Austin, Texas

DELAWARE AVIATION CORPORATION
Philadelphia International Airport
P. O. Box 5340
SAratoga 7-6000
TWX Ph. 520
Philadelphia 42, Pennsylvania

ELLIOTT FLYING SERVICE, INC.
Davenport Municipal Airport
P. O. Box 418
2-2689
Davenport, Iowa

EXECUTIVE AIRMOTIVE, INCORPORATED
Stewart Air Park
P. O. Box 70
GArfield 8-3581, *GArfield* 2-7277
Parkersburg, West Virginia

J & J AIRCRAFT, INC.
Sarasota-Bradenton Airport
821 *General Arnold Road*
ELgin 5-6868
Sarasota, Florida

KEN-MAR AIRPARK, INC.
Ken-Mar Airpark
Box 2667, *University Station*
MUrray 3-6589
Wichita, Kansas

LOUISIANA AIRCRAFT
Downtown Airport
P. O. Box 1428
WAlnut 1-9618
Baton Rouge, Louisiana

OKLAHOMA AIRCRAFT SALES CO.
Ponca City Municipal Airport
P. O. Box 709
ROgers 5-3375
Ponca City, Oklahoma

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Chicago Telephone NAtional 5-6969
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Douglas Municipal Airport
P. O. Box 1211
EXchange 9-6374
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SPARTAN AIRCRAFT COMPANY
Aviation Service Division
Tulsa Municipal Airport
TEmple 5-4491
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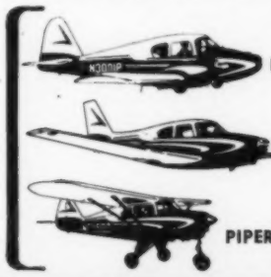

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MORE PEOPLE HAVE BOUGHT PIPERS THAN ANY OTHER PLANE IN THE WORLD

Pat Boling is pictured being interviewed after stepping from the 1958 Model J35 Beech Bonanza which he flew non-stop from Manila to Pendleton, Oregon, for a new world record, Jack Gaty, vice president and general manager of Beech, which sponsored the hop, is in straw hat. —(Beech Photo.)

Pat Boling's Trans-Pacific Bonanza Hop

THE Federation Aeronautique Internationale, which governs aircraft record trials, had not yet officially pronounced it a world record a month after it was made, but Pat Boling in a 1958 Beech J35 Bonanza made the longest non-refueled solo distance flight in commercial aviation history when he landed on August 1 at Pendleton, Oregon, 7,090 miles and 45 hrs. and 43 mins. from the flight's origination at Manila, Philippine Islands. Actual great-circle and therefore the shortest distance between the two points is 6,856.32 statute miles, which is what the records will credit him with. Actual mileage flown, however, was 7,090 and Boling averaged 155 mph. ground speed, used 391 gals. of fuel and averaged 8.55 gals. per hr. or 18.1 miles per gal. He carried 402 gals., of which 11 gals. remained unused at the flight's end.

Boling's record, soon to be confirmed by FAI, will be for aircraft grossing between 3,860-6,000 lbs. — his Bonanza grossed 4,964 lbs. on take-off.

This compares with the existing lightplane distance record of 4,957.24 great-circle miles between Honolulu, Hawaii, and Teterboro, New Jersey, flown nonstop in 1949 by Bill Odom in a 1946 Model 35 Beech Bonanza, which actually flew 5,273 miles in 36 hrs. 2 mins. to average 146.3 mph. Odom's Bonanza grossed 1,100 lbs. less than Boling's, however, weighing 3,858 lbs. at take-off, and its flight still stands as the world's distance record for aircraft grossing up to 3,860 lbs.

Here's Pat Boling with his wife and son. With 15,000 hrs. of flying, 43-year-old Boling is a United Air Lines captain whose motivation began with admiration for Charles A. Lindbergh and other distance fliers and became fixed in 1949 when he watched Bill Odom take off from Honolulu on his non-stop hop to Teterboro, N. J.

Boling's flight, sponsored by Beech Aircraft Corporation, was made to demonstrate that the 1958 Bonanza is a more efficient airplane than the 1946 Bonanza, the factory explaining that Boling's flight would be a physical impossibility in Odom's 1946 Bonanza or one similar to it.

"The relative difficulty of the two flights is not according to the simple ratio of the distances flown," a Beech statement explained. "The Boling flight would have been an impossibility in 1949. It is made possible now only by the great increase in the efficiency of the airplane and the great increase in the efficiency of the Continental fuel injection engine which powered Boling's airplane and is standard in all 1958 Bonanzas. All of our engineering tests have indicated that the fuel utilization efficiency obtained by the new 1958 Bonanza with a heavy load exceeds that of all previous airplanes."

Boling's J35 Bonanza was powered by the new six-cylinder 250-hp. Continental Model 10-470-C engine with fuel injection: Odom's 1949 flight was in a 1946 Model 35 Bonanza powered by the 185-hp. 6-cylinder Continental E-185-1 engine with carburetor.

What Boling's flight proved, all wrapped up in summation, is simply that, with both airplanes at their maximum overload gross weight, the

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The new Aero Commander 500 combines multi-seat capacity and long range . . . at much lower cost! This great new quality addition to the famous line of Aero Commander models provides *big twin* features at small twin cost.

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Only empty space left by fuel and other supplies in Pat Boling's Bonanza was the right-hand co-pilot's seat. Note Tactair autopilot, Narco radio. Cockpit also carried long-range radios, two barographs, precision fuel flow-meter, timers and warning horns, survival gear, canned water and fruit juices with electric hot cup for soup and chocolate, sufficient oxygen for 18 hrs. — and a Niagara vibrator pillow to massage his aching body. Fuel totalled 402 gals., oil 5 gals. Fuel was in tip tanks, leading edge tanks, internal tanks and special tanks installed inside the cabin.

—(Beech Photos.)

250-hp. J35 Bonanza can lift enough payload in fuel to stay in the air 9 hrs. 41 mins. longer than the 185-hp. Bonanza built in 1946 and equipped with the E-185 in 1949 — while covering more distance. Whether there was significant difference in true air speed efficiency remains to be seen — Beech did not and may not soon release sufficient details of the Boling flight to pin-point actual power-speed-distance ratios and no accurate estimate of the flight's wind factor can be made.

But in staying aloft 9 hrs. 41 mins. longer, Boling's J35 Bonanza traveled 1,817 miles farther than Odom's Bonanza. Still another factor, however, proves that the more powerful but more heavily-loaded J35 is considerably more efficient than the older model — although Boling's gauges showed his tanks were virtually empty, they were drained and found to have 11 gals. of fuel remaining and this was calculated to be sufficient for 253 additional miles, which would give the J35 a margin of 2,070 miles. Because Boling lost an unknown quantity of fuel from siphoning in flight when the vent for his extra tanks iced over, he probably could have flown several additional hours to stretch its margin to about 2,400 miles over Odom's record. This would have stretched Boling's total distance to 7,673 miles.

This probability is not mere guesswork. Boling made good an average of 18.1 miles per gal. but must have averaged 19 miles per gal. because of the fuel lost overboard in icing conditions. Beech engineering apparently believes the J35 was good for an average of better than 20 miles per gal. under ideal conditions. With Boling's 402 gals. of fuel capacity, this would give an all-out distance of 8,000 miles. In fact, the Boling flight was billed in advance as an attempt to fly 8,500 miles nonstop on the 402 gals of fuel.

Boling's J35 performance in range and miles per gallon was at an average ground speed of 155 mph. in contrast to Odom's average of 19.2 miles per gal. at 146.3 mph. Assuming that both airplanes had the same wind factor, this would also give the edge in efficiency to the J35 by a considerable margin in view of its greater overload.

Loss of fuel by siphoning due to icing of the vent for Boling's extra cabin fuel tanks needs to be explained, because this could not happen to a J35 Bonanza's regular fuel system, which is protected against such conditions. Boling's large cabin tanks were a one-time special installation and were not protected against vent icing, as is the airplane's regular fuel system.

Boling began his long flight on Wednesday, July 30 (Wichita standard time or CST), at 4:09 p. m. His fuel was chilled before loading to pack more BTU's into the tanks and he kept the cabin curtains closed to protect the big tanks from the sun's rays until dusk so that they would not heat and lose volume by overflow. At its take-off gross weight of 4,964 lbs., his Bonanza was overloaded by 2,064 lbs. Normal empty weight for the J35 Bonanza is 1,820 lbs., so that Boling's J35 was carrying 3,144 lbs. more than its own weight or almost three times its normal useful load.

Even so, the heavily-loaded Bonanza was off the ground after a run of only 3,000 ft. Its sea level rate of climb at its heavy weight was only 390 feet per min., or less than 35% of its normal rate of climb, but Boling climbed at an even lesser rate, and he dog-legged his course considerably rather than turn abruptly to his heading (his overload stall speed was 74 mph. as compared to 57-mph. normal-gross-weight stall speed). The pilot was meticulously adhering to a very exacting flight plan of balancing ever-changing weight-power-speed-fuel-distance factors. Details of this planning and execution are still a carefully-guarded Beech secret — it required extensive engineering and actual flight experimentation for formulation and would be the key and a very expensive one to any competitive attempt to exceed the Boling record. Only fragments of the Boling log are available from Beech, but even these may be analyzed to learn several interesting facts. Here are the log items so far released:

1. Take-off plus 16 hrs. 1 min.: 2,550 miles flown to a point near Hokkaido, Japan, averaging 159.3 mph. ground speed. Boling had climbed only to 6,000 ft. at this point. He had climbed only to 2,000 ft. as he passed Okinawa. He did not reach 10,000 ft. until 32 hrs. after take-off. The lowest elevation was 1,500 ft. in heavy rain about 40 hrs. after take-

(Continued on page 62)

Sit back and relax . . .

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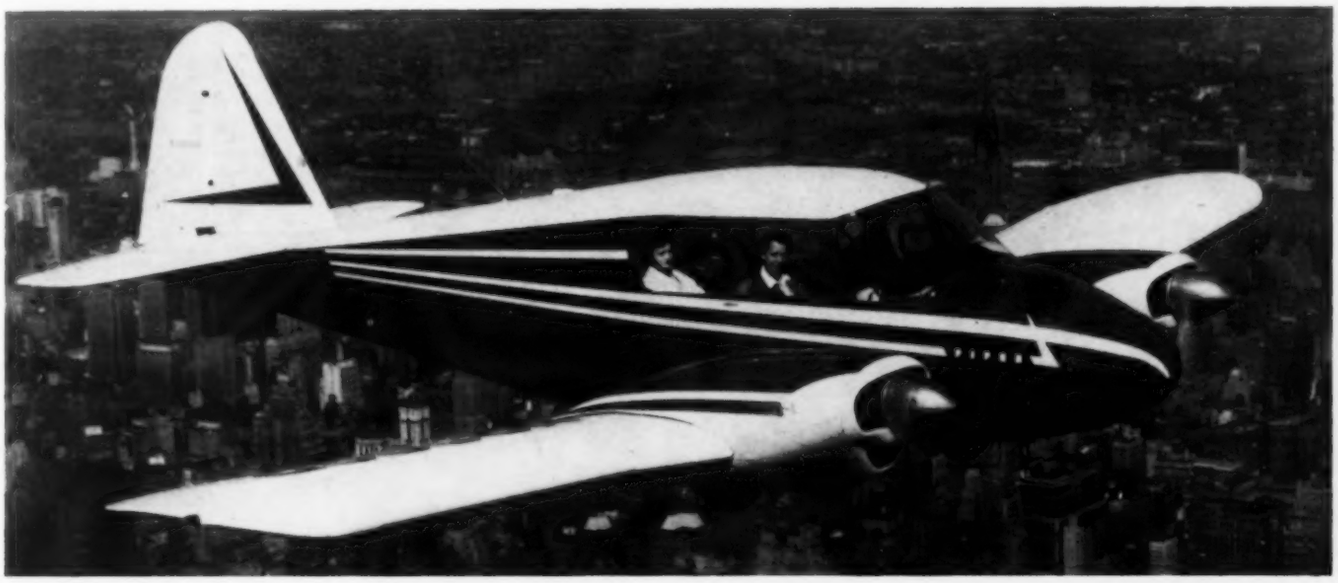

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Put Your BEECHCRAFT in BEECHCRAFT Hands

AIR REPORT

(Continued from page 8)

billed at $20,786,000 for the 1958 first half.

Twin-engine models showed good strength, six-month deliveries increasing from 488 to 531, with Beech taking the lead from Piper. Beech delivered 201 twins, Piper 186 Apaches, Cessna 108 310B's and Aero Design 36 Aero Commanders. In the Beech total are 132 Travel Airs, 37 Twin-Bonanzas and 32 Model 18's. Piper had delivered 237 Apaches during the first half of 1957.

Among the smaller companies, Champion and Mooney scored large gains, Champion increasing its first-half volume of 2-place aircraft business from 108 planes and $492,000 to 152 planes and $768,000, while Mooney increased its 4-place business from 41 planes and $411,000 to 67 planes and $763,000.

The industry mid-year report, broken down by makes and models, follows in full:

Make and Model	Jan.-June 1958 Deliveries	Jan.-June 1957 Deliveries
Aero Commander		
Model 560E	12	—
Model 560A	—	11
Model 680	24	70
Total All Models	36	81
Tot. Billings (000)	$ 2,714	$ 6,003
Beech		
Bonanza	218	281
Model 18S	32	65
Twin-Bonanza	37	56
45 Mentor	25	25
Travel Air	132	9
Total All Models	444	436
Tot. Billings (000)	$16,633	$17,574
Call Air Model A4	21	15
Tot. Billings (000)	$ 140	$ 90
Cessna		
Model 170	—	36
Model 172	374	413
Model 175	444	—
Model 180	147	255
Model 182	508	483
Model 310	—	70
Model 310B	108	—
Total All Models	1,581	1,257
Tot. Billings (000)	$20,786	$14,940
Champion		
Model 7EC	28	69
Model 7FC	124	39
Total All Models	152	108
Tot. Billings (000)	$ 768	$ 492
Helio Model H 391B	15	—
Tot. Billings (000)	$ 425	—
Mooney Mark 20	67	41
Tot. Billings (000)	$ 763	$ 411
Piper		
Super Cub	319	487
Tri-Pacer	417	637
Apache	186	237
Comanche	209	—
Total All Models	1,131	1,402
Tot. Billings (000)	$13,334	$13,680
Taylorcraft Model 20	6	6
Tot. Billings (000)	$ 66	$ 62
TOTAL DELIVERIES	3,453	3,346
Tot. Billings (000)	$55,629	$53,252

NOTE: Helio delivered 33 Couriers billed at $874,000 in 1957 but mid-year breakdown missing.

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with convenient squirt top for plastic windshields. Restores and maintains flexibility, prevents crazing and cracking. Even restores visibility to old windshields by removing mild scratches.

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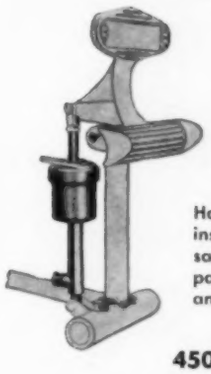

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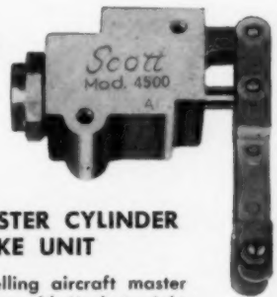

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NBAA Convention Program Schedule

MANY features are planned for the 11th annual meeting and forum of the National Business Aircraft Association, Inc., September 22-24 in Philadelphia. In addition to discussions led by industry leaders, there will be exhibits of newest equipment developments and both static and flying displays of business aircraft at Philadelphia International Airport. Following is an outline of the program as listed by William K. Lawton, executive director:

Sunday, September 21

12:00 Noon to 6 p. m. — Registration opens at Bellevue Stratford Hotel, 18th floor.

Monday, September 22

8 a. m. to 7 p. m. — Registration continues.

8 a. m. to 9 a. m. — Welcome QB Breakfast for visiting Quiet Birdmen and their guests, sponsored by Philadelphia, Wilmington and Trenton QB Hangars (purchase tickets at door), Bellevue Stratford Hotel, Clover Room.

9 a. m. to 6 p. m. — Exhibit area opens, entire 18th floor displaying each day of 3-day meeting latest in aircraft, parts, accessories, radios, instruments and services.

9:30 a. m. to 10:50 a. m. — Annual membership business meeting, Bellevue Stratford, 18th floor, Rose Garden.

11 a. m. to 12 Noon — "Value-per-mile" forum to measure value of business aircraft, with Dr. Leslie Thomason, air age education director of Cessna Aircraft Co., as speaker and Henry W. Boggess, NBAA Board Member, as moderator; Bellevue Stratford, Rose Garden.

2 p. m. to 5 p. m. — Symposium on Pratt & Whitney engines and accessories, with Walter C. Pague, NBAA board member, as moderator, Bellevue Stratford, Rose Garden.

2 p. m. to 5 p. m. — Symposium on Lycoming engines and accessories, with John H. Winant, NBAA treasurer, as moderator, Bellevue Stratford, Clover Room.

6:30 p. m. to 7:30 p. m. — First-Nighter Hospitality Hour, Bellevue Stratford, Clover and Red Rooms.

7:45 p. m. — First-Nighter Banquet, Bellevue Stratford, ballroom, 1st floor; Joseph B. Burns, NBAA president, chairman; Senator A. S. (Mike) Monroney of Oklahoma, speaker.

Tuesday, September 23

8:30 a. m. — Registration continues. 9 a. m. — Exhibit area opens.

9:15 a. m. to 11:45 a. m. — Symposium on Continental engines and accessories, with NBAA Board Member E. M. Beattie as moderator, Bellevue Stratford, Rose Garden.

9:15 a. m. to 11:45 a. m. — Symposium on Rolls Royce engines and accessories, NBAA Board Member C. F. Zimmerman, moderator, Bellevue Stratford, Green Room.

9:15 a. m. to 11:45 a. m. — Symposium on Wright engines and accessories, NBAA Board Member Jim Ketner, moderator, Bellevue Stratford, Crystal Room.

12:15 p. m. to 1:45 p. m. — Pilot Safety Awards Luncheon, Bellevue Stratford, Grand ballroom; Ned H. Dearborn, National Safety Council president, principal speaker; Ralph E. Piper, NBAA Awards Committee, chairman.

2 p. m. to 3 p. m. — The Weather Bureau's Five-Year Plan; speaker, Newton A. Lieurance, director, Aviation Weather Services; William K. Lawton, NBAA executive director, chairman; Bellevue Stratford, Rose Garden.

3:15 p. m. to 5 p. m. — Review of NBAA's Recommended Standards Manual, with panel discussion and questions and answers, NBAA Board Member Henry W. Boggess, chairman; Bellevue Stratford, Rose Garden.

6:30 p. m. to 7:30 p. m. — NBAA Annual Hospitality Hour, Bellevue Stratford, Clover and Red Rooms.

7:45 p. m. — NBAA Company Safety Awards Banquet,

NBAA President Joseph B. Burns, chairman; toastmaster and speaker to be announced; Bellevue Stratford, Grand ballroom.

Wednesday, September 24

8 a. m. — Registration continues. 9 a. m. — Exhibit area opens.

9:15 a. m. to 11:30 a. m. — Joint NBAA-NASAO Meeting, Bellevue Stratford, Rose Garden; Air Traffic Control Seminar with reports by spokesmen for government agencies; NBAA Board Member B. J. Bergesen and NASAO Representative Crocker Snow, moderators.

11:40 a. m. to 12:30 p. m. — Busses leave for Philadelphia International Airport, Atlantic Aviation hangar for buffet luncheon to 1:30 p. m.

1:45 p. m. to 6 p. m. — Civil Air Power on Parade; flying and static displays of civil aircraft with invited participants including Aero Design, Beech, Bell, Cessna, Doman Helicopters, Fairchild, Grumman, Helio, Hiller, Kaman Aircraft, Lockheed, Mooney, North American Aviation, On Mark Engineering, Omega Aircraft, Piasecki Aircraft, Piper, Republic, Sikorsky and Vertol.

4 p. m. to 6 p. m. — Busses leave for Bellevue Stratford.

7 p. m. to midnight — Pennsylvania Dutch Night, with Dutch food, entertainment and dancing.

PROP-JET ENGINE CONVERSIONS FOR CONVAIR 340 AND 440 TRANSPORTS are being offered to corporate and airline operators by Allison Division of General Motors. Package deal includes installation of Allison 501 prop-jet engines and Aeroproducts propellers, airframe modifications, increased tail area, additional soundproofing and full CAA certification. PacAero Engineering Corp., Santa Monica, has been selected to perform the conversion work, according to Harold H. Dice, assistant general manager of Allison, and Allison will handle all financial and contractual arrangements. With the big Allison turboprop engines, he said cruise speed at 47,000 lbs. is increased from 270 mph. to 350 mph., with 2,000-fpm. average rate of climb to 15,000 ft. as compared to the unmodified Convair's average of only 700 fpm.

NATIONWIDE ROUNDUP:

New Business In the Hangar

A sales team is now contacting corporate owners, trunk and local service airlines. Allison is using a converted YC-131C to demonstrate and engineering of the conversion is well under way for an immediate CAA certification program, with delivery of the first fully-certificated conversion scheduled for November, 1959. Conversions thereafter will be completed with only 60 days down-time per aircraft.

REMMERT-WERNER at Lambert Field, St. Louis has Ross Manufacturing's D18S for installation of Collins 17L7-51X2 with omni, Collins 17L8-51X3 standby, Sperry H5 electric gyro horizon, Collins 51V3 glideslope, ARC-21 lightweight ADF, custom panels, modernized front bulkhead and rear bulkhead removal, new interior fabrics and re-upholstering, exterior stripping and repainting, double engine change, prop overhaul, wing removal, 1,000-hr. inspection and other work. . . . A Collins 51X receiver was installed in Gus Rahm's Schenley Industries Super-92 DC-3. . . . Lee Snow brought Offshore Company's DC-3 in for an engine change, installation of a five-point magneto harness and 100-hr. inspection in the Wrap-Around shop. . . . The Mississippi River Fuel Lodestar, Ralph Primo and Ray Waldt, pilots, has a fresh Super-92

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WITH THE BEST!

* These Aircraft Cleaners and Polishes MUST be tops or they couldn't carry Air Associates Name.

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A Division of Electronic Communications, Inc.
Atlanta, Ga.; Chicago, Ill.; Dallas, Tex.; Glendale, Calif. Miami, Fla.; San Francisco, Calif.; and Teterboro, N.J.

ALUMINUM POLISH Cleans and polishes unpainted aluminum-clad surfaces in one operation. Non-inflammable, Non-toxic, Non-corrosive to aircraft metals. Will not damage Plexiglas or painted surfaces that are polish-spattered during the cleaning operation.
$2 QT. $4.95 GAL.

WINDSHIELD CLEANER . . . Non-crazing, Anti-static and Non-inflammable. Especially formulated to clean and polish Plexiglas, Lucite or Sierracin windshields, windows, canopies, helicopter domes or other transparent plastic surfaces. Easily removes service haze, oil spatter, bug and water marks.
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DEVELOPED expressly for airplanes and sold only through aviation supply houses. Contact your nearest AIR ASSOCIATES Dealer.

SILICONE GLAZE . . . Cleans, waxes and protects. Formulated for use on lacquered, enameled and doped fabric finishes. Easily applied and removed. Gives long-lasting protection from service soils, sun, rain. Essential for aircraft not normally kept in hangars.
$2 PT. $8.00 GAL.

SPEED-GLO POLISH Cleans and polishes all lacquered, enameled or doped fabric aircraft finishes in one easy operation. Formulated to quickly remove service soils and oxidized paint pigments with a minimum of effort and to produce hard, dry, lustrous finish.
$1 PT. $4.50 GAL.

engine installed. . . . TV Associates sent two of their Beech twins in for double engine changes, 100-hr. inspections, Hartzell 3-blade props, radio installations and other work. . . . Skip Wittner and Bob Quelch brought in Kewanee Oil's PBY for licensing, rudder modifications, installation of an executive interior and galley and other conversion work. . . . Floyd Graham's Carrier Corporation DC-3 was in for short stacks and landing gear door modifications. . . . The Freeport Gas & Coal Aero Commander, Tom Jenkins, pilot, had an engine change, and the H. D. Tousley Construction Aero Commander received an engine change and a 100-hr. inspection.

EXECUTIVE AIRCRAFT SERVICE, Red Bird Airport, Dallas, has delivered E. P. (Cotton) Jeter's United Gas Convair 440 after performing engine change, 100-hr. inspection and bulletin compliance. . . . Col. E. W. Estelle received delivery of an Esso DC-3 with 1,000-hr. inspection, paint job, installation of dual lightweight ARC-21 ADF's and Sperry Integrated Flight System, and has a second Esso DC-3 in the shop for the same treatment. . . . Ed Armstrong had two S. W. Richardson DC-3's in for periodic maintenance.

COLLINS RADIO has announced its new 621A-2 air traffic control transponder, which weighs 26 lbs. and fits a ½ ATR rack. With a crystal-controlled receiver on 1030 mc and 500-w transmitter on 1090 mc, power requirements are 150 va, 115 v, 300-1,000 cps. .3 amps, 27.5 vdc. Reply pulse spacing is 2.9 usec with capability of 1.45 usec and modes of interrogation are 8, 17 or a choice of 19, 21, 23 or 25 usec. Self-cooling is by blower. A part of the ATC radar beacon system, the 621A-2 transponder provides a signal which reinforces radar replies and permits positive identification of the aircraft despite rain, ground clutter or operation near the maximum range of the radar. A pair of spaced pulses transmitted on 1030 mc to the transponder in the aircraft causes a reply to be transmitted on 1090 mc with four different modes of interrogation accommodated. Reply consists of 2 to 15 accurately spaced pulses and one identification pulse to the air traffic control center radar, with the current system providing a choice of 64 different coded replies which may be selected by the pilot using a control unit. Additionally, a special identification pulse may be transmitted following the code reply. Reply codes may furnish a variety of information to the air traffic controller. For example, the pilot may indicate either the aircraft is enroute or show which airport is to be used or which controller has responsibility. The Collins 621A-2 meets ARINC requirements.

AIRESEARCH AVIATION SERVICE, Los Angeles International Airport, has in its hangar General Electric's Convair 340B for a 2,000-hr. inspection and overhaul, custom-designed exterior painting, engine change and miscellaneous interior work. Gene Beattie is manager of

NEW JET TRANSPORT SEAT by Burns Aero Seat Co. has basic seat weight of 25 lbs. and incorporates integral folding food tables in the back, underseat clearance, integrated recline controls, seamless molded armrests, full-folding de-lethalized backs with self-ejecting center armrests, large ashtray with cigarette holder, no-bottoming cushion, stewardess step if desired, transparent or opaque side panels and interchangeable parts. It can be used for either aircoach or deluxe installations and is going into all jet transports soon to be delivered.

PIPER APACHE with TACTAIR AUTOPILOT

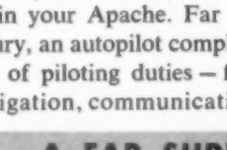
Now CAA Approved — Simple, Lightweight Installation

Now you can enjoy the finest in automatic flight with your Piper Apache equipped with the Tactair T-3 Automatic Pilot—by far, the fastest-selling autopilot on the market today.

No question that you'll want a Tactair in your Apache. Far more than a luxury, an autopilot completely relieves you of piloting duties – frees you for navigation, communications, looking around. Whether VFR or IFR, you'll arrive without fatigue, ready for the business at hand.

No question, either, about your choice of the Tactair—far superior in concept, design, and performance...the only modern, pneumatic autopilot offered today. CAA approved for most business aircraft. Installation is quick and simple. Write today for brochure.

A FAR SUPERIOR AUTOPILOT SYSTEM



The Tactair T-3 operates pneumatically with no warm-up, no power drain, no tubes—so mechanically simple, yet so "human," that it makes any other flight system obsolete. Weighs only 7.3 pounds, simple to install, virtually maintenance-free.

WITH TRUE-READING HEADING LOCK

Tactair's heading lock works on the DG with no confusing zero heading. Merely set the upper card to course desired and you fly that course precisely. No complicated resetting for new course necessary.

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AIRCRAFT PRODUCTS CO.
BRIDGEPORT, PENNSYLVANIA

For 18 Years Specialists in Precision Aircraft Pneumatic and Hydraulic Controls

executive aircraft operations. . . . Napier Eland turboprop Convair 340 was brought in by Angelo Gualtiere, aviation division manager, for combination executive-airline interior, latest type soundproofing installation including double windows, and exterior painting. . . . Charlie Bing's J. J. Ryan B-25 is undergoing miscellaneous engine maintenance and Day-Glo safety paint scheme. . . . Lone Star Mud's Lodestar from Dallas was in for miscellaneous radio and engine work and Joe Potter brought in the La Brea Securities Cessna 310 for a Day-Glo paint job.

AVIATION SERVICE DIVISION of the Spartan Aircraft Company, Tulsa Municipal Airport, has been named regional distributor for the Federal tubeless autopilot covering Oklahoma, Arkansas, New Mexico and the Texas Panhandle. Dealers are being selected by Spartan.

PACAERO ENGINEERING CORP., Santa Monica, has been selected by Allison to perform Convair 340-440 propjet conversions being marketed by Allison. . . . Westinghouse Electric Corp. has received delivery of its second Learstar Mark II, A. C. Korb, chief pilot. . . . British American Oil, Toronto, has received delivery of its second Learstar, a Mark 1A, R. J. McVicar, chief pilot. . . . Bob Darnall brought in Johnson & Johnson's DC-3 for interior work. . . . Bechtel Corporation's Lodestar has received the Learstar rudder spring tab system, this being the third Bechtel Lodestar to have the system installed. . . . Jacqueline Cochran's pilot, Tom Davis, brought in her Lodestar for empennage modification, wing and flap modification, 1,000-hr. inspection and various other work. . . . Learstars coming in for service included those of Burroughs Corporation, Don MacDonald, chief pilot; Avco Manufacturing, Bailey Case, chief pilot, and Chance Vought Aircraft, Al Brill, chief pilot.

EW LIGHTPLANE BATTERY has -plastic container, vent plug with no oving parts, gives up to 16.3% greater wer per unit volume, is 4 to 11% hter in weight and 5/16-in. smaller ight. It is new Exide AC battery, read- interchangeable with similar size batteries in all lightplanes.

AIR ASSOCIATES, division of Electronics Communications, Inc., has been appointed distributor by Lawter Chemicals for its line of bold safety-sight fluorescent colors through Air Associates' eight distribution centers at Teterboro, Miami, Dallas, Atlanta, Cleveland, Chicago, Glendale and San Francisco. Air Associates will paint its fleet of planes with the Lawter high-conspicuity fluorescent colors.

CAPITOL AVIATION, Capitol Airport, Springfield, Illinois, had Ideal Cement's Denver-based DC-3 in for engine change. . . . Sangamo Electric's Learstar received double engine change, No. 1 inspection, wiring for engine analyzer, Winslow oil filters and oxygen system modification. . . . Feldman Oil's Learstar was in for 100-hr. inspection. . . . Atwood Vacuum Machine's 680 Aero Commander was in for double engine change, periodic inspection, ARC-210 communications system and installation of Capitol Aviation's STC SA3-301 auxiliary electric hydraulic system. . . . Le-Tourneau-Westinghouse's Lodestar was in for double engine change, periodic inspection, fuel tank reseal and double landing gear change. . . . Radar repairs were made on Green Construction's Super Ventura, Mead Johnson's DC-3, Morton Salt's Ventura, Sangamo Electric's Learstars and Solo

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Complete Kits... Ready to Install!

NEW

D-18 ENGINE MODERNIZATION KIT for increased power, quieter performance. Features: Automatic Oil Regulator & Cooler • 3-Blade Propellers • Modified Carburetor Air Scoop System • Nose Case Fairing • Cowl Liner

NEW

AVQ-50 RADOME KITS for Beechcraft Model 50, D-18 & E-18 • Aero Commander • Lodestar

NEW

"PAGAN" D-18 MODERNIZATION KITS. Full-Contour Main Gear Doors • Full-Contour Tail Gear Doors • Fiberglas Air-Step Door • Full-Vue Picture Windows • Modernized Fiberglas Nose Bowl • Auxiliary Wing Fuel Tank System

See these new kits on display at the NBAA Show—Sept. 22 thru 26, Bellevue Stratford Hotel, Philadelphia, Pa.—Booths 43-44-45 or write for full details.

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90 CHANNELS

Yes, 90 channels, crystal controlled for instant positive tuning.

Fits your glove compartment and is available in flat black or parchment white.

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FEATURES

- Weight, less dynamotor, 5 pounds
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Complete with shock-mounts, Antenna, crystals and power supply.

Dynamotor powered..... $795.00

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"WRIGHT ALL OVER THE WORLD"

FOR SCHEDULED SERVICE BEGINNING BEFORE YEAR-END, this and other Boeing 707 jetliners are nearing delivery to American Airlines. Nonstop schedules between New York and Los Angeles-San Francisco will be inaugurated first, following by April 1 with jetliner schedules to seven cities — New York, Los Angeles, San Francisco, Chicago, Dallas, Washington and Baltimore. Jets will cut 40% off existing schedules between cities, nonstop Los Angeles-New York flight being only 5 hrs. or less. Gross take-off weight is 247,000 lbs.

Cup's Learstar. . . . A Mitchell autopilot was installed in Ray Neiswander's Cessna 310B. . . . Cox Transit's C-50 Twin-Bonanza received periodic inspection and Day-Glo trim.

SPERRY GYROSCOPE SPEX FLIGHT EQUIPMENT EXCHANGE PROGRAM is serviced by eight regional district offices and major repair and maintenance centers, located as follows: Midwestern District, 3807 W. 150th St., Cleveland 11, Ohio, E. C. Weyhgandt, manager; Southwestern District, 2200 East Imperial Highway, El Segundo, Calif., W. I. Selover, manager; Southern Distirct, 630 Gaiennie St., New Orleans, J. E. Boelte, manager; Wichita District, 1830 Industrial Ave., Wichita, J. B. Connelly, superintendent; Northwestern District, 300 W. Harrison St., Seattle, L. N. Swisher, manager; Pacific District, 715 Folsom St., San Francisco, W. F. Horn, manager; Repair and Service Facility, Great Neck, L. I., New York, Paul Harry, manager, and Sperry Flight Research Center, Field Service Facility, MacArthur Airport, L. I., New York, W. G. Herstol, manager.

TEMCO AIRCRAFT'S GREENVILLE, TEXAS, PLANT has a contract for overhaul and modification of Air Force C-97 aircraft through July, 1959, involving 60 deliveries with some of the aircraft receiving periodic aircraft reconditioning cycle and modification and others modification only.

LOCKHEED AIRCRAFT SERVICE has a license agreement with Boeing for authorized maintenance of commercial jet transports at its Ontario and Oakland plants in California and in New York.

WILLIAM C. WOLD ASSOCIATES, New York, has sold a Howard

Autopilot Omni Coupler

Weight—4 lbs.
Current ½ amp.
Immediately available

The ANC-2 Computer uses the most advanced techniques to lock the L-2 autopilot to the ARC CD-1 Course Director to fly en route omni with extreme precision. Write for folder.

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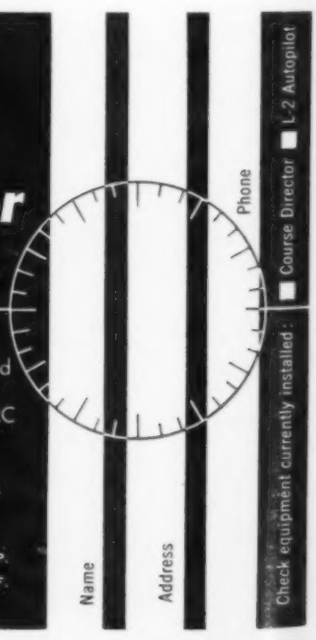


Super Ventura to Ryder Systems, Inc., of Miami, and it is receiving a new executive interior providing seating and work space for ten persons with sleeping accommodations for two. Radar, autopilot and integrated flight system are being installed.

DAY-GLO FLUORESCENT PAINT is being applied to all of the 17 Lear, Inc. airplanes because Bill Lear experienced a near-miss with an F-86 recently. He believes 30% of an airplane's surface should be painted for maximum anti-collision protection.

DALLAS AERO SERVICE, Love Field, Dallas, had two Central Airlines DC-3's in, one for heater installation and repaint job, the other for 11,000-hr. overhaul. . . . Dick Barker's Renwar Lodestar is in for the Dallas Aero speed-safety-stability modification and Bendix radar installation. . . . Speed Johnson brought in LeSage Industries Beech 18 for complete electrical rewiring, with Associated Radio rewiring all radio and installing a custom panel. . . . Bill Rector's Whittle Construction de Havilland Dove had a flat tank installed. R. E. Harding's Bonanza was in for extensive repairs.

AERO CORPORATION OF ATLANTA, Municipal Airport, Atlanta, performed X-ray inspection on the Alcoa Aluminum Aero Commander, William P. Ludwig, maintenance chief. . . . Harold Wright's Hyde Construction Beech D18 was in for interior modernization. . . . Tennessee Gas Transmission sent in a Beech E18 for installation of RCA radar with a 5-in. scope. . . . Irvin Parachute's de Havilland Dove received a 100-hr. inspection. . . . Aero Corp. is expanding its engine overhaul facility for additional military contract work and additional Redstone Arsenal missile work is being performed.

PIEDMONT AVIATION, Winston-Salem, North Carolina, had Procter and Gamble Distributing Company's DC-3 in for new interior, paint job, radio work, miscellaneous repairs and 100-hr. inspection. . . . Stephen Richards brought in the Magnaflux DC-3 for miscellaneous repairs and 100-hr. inspection, as did Leo Boyd with his Tennessee Eastman DC-3. . . . Bill Ashton got a paint job and 100-hr. inspection for Detroit Steel's DC-3, Hap Wilson brought in his Management Service DC-3 for 100-hr. inspection and miscellaneous repairs, and Lawrence Gesse's S & E Cafeterias DC-3 received an engine change. . . . The Vansant Coal PA-23 was in for radio installation, miscellaneous repairs and 100-hr. inspection. . . . The Champion Paper Cessna 310 was equipped with long-range fuel system. . . . Grady Adams brought in Smith Transfer's Beech E18S from Staunton, Virginia, for 100-hr. inspection; R. J. Reynolds' chief pilot, Herb Drew, had a 100-hr. inspection for his E18S; the Slane Hosiery Mills' AT-11 had a 100-hr. inspection and miscellaneous repairs and Bob Amundsen brought in Pocahontas Fuel's D18S for miscellaneous work.

ROSS AVIATION has been named as the fixed-base operator at Tulsa's newest municipal airport, located just south of metropolitan Tulsa, and has taken over a newly-completed hangar with plans to open complete overhaul and maintenance facilities by Oct. 1.

BAY AVIATION SERVICES COMPANY, San Francisco International Airport, has received CAA Certificate No. 4155 for its radio shop, rating it to handle all radio and electronic work for airline, business and private aircraft with the exception of radar installations. Lehman (Mac) Hauger heads the shop, which is dealer or distributor for all major aircraft radio manufacturers.

Airmen's Calendar

Sept. 17-19—6th Annual Michigan Aeronautics Conference, Mother Inn, Ishpeming.

Sept. 20-21—2nd Annual Convention, New York State Wing, OX5 Club of America, Saranac Hotel, Saranac, N. Y.

Sept. 22-24—National Business Aircraft Association Convention, Bellevue Stratford Hotel, Philadelphia.

Sept. 23-25—RTCA Radio Technical Commission for Aeronautics Fall Assembly Meeting, Chamberlin Hotel, Old Point Comfort, Ft. Monroe, Va.

Sept. 25—Massachusetts Aviation Conference, Lawrence, Mass.

Sept. 25-27—5th Annual National Western Forum, American Helicopter Society, Ambassador Hotel, Los Angeles.

Sept. 25-28—Air Force Association Convention and Air Power Panorama, Dallas.

Sept. 29-30—Airport Operations Council Mid-Year Conference, Mayo Hotel, Tulsa.

Oct. 1-3—National Airports Conference, University of Oklahoma, Norman, Okla.

Oct. 3-4—Annual Paul Bunyan Flight, Traverse City, Michigan.

Oct. 4-11—10th Anniversary All-Texas Air Tour, 3,000 Miles With 40 Stops, Starting at Temple, Texas. Address correspondence to Texas Air Tours, 307 Walton Bldg., Austin, Tex.

Oct. 5-7—22nd Annual International Northwest Aviation Council, Northern Hotel, Billings, Montana.

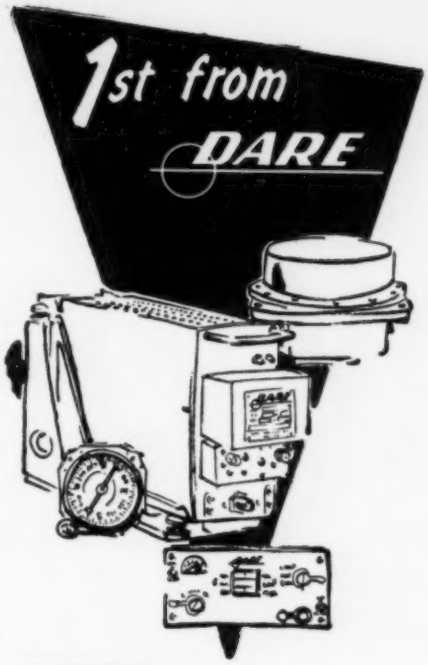
Oct. 8-10—14th Annual Champion Aviation Spark Plug and Ignition Conference, Secor Hotel, Toledo, Ohio.

Oct. 15-17—11th Annual Indiana Aviation Conference, Turkey Run State Park, Marshall, Indiana.

Oct. 18-19—Open House, Fly-In; Banquet Celebrating Tucson Airport Authority's Ten Years of Aviation Advancement, details from Bob Schmidt, manager, Municipal Airport, Tucson, Arizona.

Nov. 11-14—19th Annual Convention, National Aviation Trades Association, Pfister Hotel, Milwaukee.

Nov. 19-21—32nd Meeting, Aviation Distributors and Manufacturers Association.



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See your DARE Distributor, or Write today, for complete literature

DARE
INC.
TROY, OHIO

TRANS-PACIFIC BONANZA

(Continued from page 52)

off to let down out of icing in the clouds, so that he remained at 10,000 ft. or above only about 8 hrs. He did not see the surface between Japan and Cold Bay, Alaska.

2. Take-off plus 19 hrs. 1 min.: 2,870 miles to a point east of the Kurile Islands, 151-mph. AGS. Between checkpoints 1 and 2, he covered only 320 miles in 3 hrs. for a ground speed of only 106 mph.

3. Take-off plus 28 hrs. 1 mins.: 4,450 miles to a point north of Adak, Aleutian Islands, 158.9 mph. AGS. Favorable winds must have been picked up to average 174.5 mph. between checkpoints 2 and 3.

4. Take-off plus 32 hrs. 1 min.: 5,110 miles to a point over Shumagin Island near Cold Bay, Alaska, 159.6-mph. AGS from take-off (150-mph. between checkpoint 3 and 4).

5. Take-off plus 36 hrs. 1 min.: Reported west, northwest of Sandspit, Alaska, with no mileage computed but began estimating Boise, Idaho, as destination.

6. Take-off plus 39 hrs. 53 mins.: 6,200 miles from take-off, over Sandspit, Alaska, 156.9-mph. AGS from take-off, reported aircraft icing and beginning to let down below clouds.

7. Take-off plus 41 hrs. 49 mins.: 6,465 miles, reported past Queen Charlotte Island after altering course in weather, 155.7-mph. AGS from take-off.

8. Take-off plus 45 hrs. 43 mins., landed at Pendleton, Oregon, 7,090 miles from take-off, 155-mph. AGS. Fuel gauges indicated empty but 11 gals. drained from tanks. Evidence found of considerable quantity of fuel, estimated as sufficient for several hours, having siphoned overboard during icing. Oil consumption was 6 qts.

Jack Gaty, Beech vice president and general manager, said an immediate inspection showed the engine completely clean without a speck of oil anywhere. The engine operated perfectly except for one spark plug, which was weak at low power although it functioned perfectly at normal power settings.

"We put some new gasoline in the tanks and, without changing oil or changing the spark plug or making any adjustments whatever, flew the airplane into Wichita in an elapsed time of 7 hrs. 40 mins. from Pendleton," Gaty reported. "When we arrived, it was ready for another long-range flight if anyone had wished to make it."

Unlike the airplane and its engine and other mechanical components, Pilot Boling showed utter exhaustion from the physical beating he absorbed in nearly 46 hrs. of flight. "As a matter of fact," Gaty reports, "two days after the flight terminated, Boling felt like he had been beaten by baseball bats and had to spend all of Sunday in bed. In other words, he did not know how tired he actually was when he landed. We are grateful he landed at Pendleton instead of continuing farther."

Gaty believes God was Co-pilot during Boling's final leg. He told Boling and his wife he thought the loss of fuel was a Divine intervention to save the iron-willed pilot from the rough air and difficult conditions over the mountains at a time when Boling was not adequately able to meet such conditions due to his exhaustion.

Gaty feels deeply against anybody flying solo for such a long period and strongly recommends against any attempt to exceed Boling's record. "We know that some people will try it and that some will die trying, in spite of our advice," Gaty commented. "That Pat Boling did not fail is mainly due to his perfect physical condition, his athletic physique and his healthy mode of living, combined with an iron determination to succeed in spite of all circumstances, plus 15,000 hours of airline experience which operated through his subconscious mind to carry him through to ultimate success after he had become so fatigued that his conscious thinking was severely handicapped."

As for the flight's significance, Gaty had this to say: "This flight was incontrovertible evidence that the airplanes and engines of today have capabilities that far surpass the abilities and reliability normally required of a private vehicle, and that their owners can feel that they own a mechanism that represents the highest degree of engineering sophistication."

Here is a tabular comparison of the Bonanzas used by Bill Odom in 1949 and Pat Boling in 1958 to show the differences between them and their historical flights:

	Odom's 1946 Model 35	Boling's 1958 J35
Continental Engine Model	E-185-1	10-470-C
Horsepower at rpm.	185 at 2,300	250 at 2,600
Take-off Gr. Wt., lbs.	3,858	4,964
Normal Gr. Wt., lbs.	2,550	2,900
Original Empty Wt., lbs.	1,558	1,820
Modified Empty Wt., lbs.	1,854	2,210
Useful Ld., lbs.	2,004	2,754
Fuel Cap., gals.	288	402
Rate of Climb at Take-off, fpm. and lbs.	340 at 3,858	390 at 4,964
Distance Flown, mi.	5,273	7,090
Hrs.: Mins.	36:02	45:43
Average Gr. Spd., mph.	146.3	155
Fuel Consumed, gals.	272.2	391
Gals. Per Hr.	7.56	8.55
Mi. Per Gal.	19.2	18.1

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These Authorized Stations Feature Flat-Rate Service

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Aircraft Sales Company
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Fort Worth, Texas

Champ's Aviation, Inc.
Municipal Airport
El Paso and Lubbock, Texas

Clinton Aviation Company
Stapleton Airfield
Denver, Colorado

Cruse Aviation, Inc.
International Airport
and Clover Field Airport
Houston, Texas

Dal-Tex Aviation, Inc.
Highland Park Airport and Love Field
Dallas, Texas

Hair Flying Service
Harding Field
Baton Rouge, Louisiana

Poelman Aircraft Co.
New Orleans Airport
New Orleans, Louisiana

Ragsdale Flying Service
Municipal Airport
Austin, Texas

Kenneth Starnes Aviation Service
Adams Field
Little Rock, Arkansas

Southwestern Skyways, Inc.
Municipal Airport
Santa Fe, New Mexico
and Ogden, Utah

Sunny South Aircraft Service, Inc.
Broward International Airport
Fort Lauderdale, Florida

Walston Aviation, Inc.
Civic Memorial Airport
East Alton, Illinois

Yingling Aircraft, Inc.
Municipal Airport
Wichita, Kansas

SERVICE SATISFACTION

SMILING SERVICE is what you expect and always receive when our Authorized Cessna Service Stations solve your maintenance needs! We furnish factory skills, factory equipment and factory satisfaction. Cessnas are our specialty . . . and we follow a policy of giving Cessna users a little more, a little better service — LIKE OUR FAMOUS 1-2-3 CESSNA FLAT-RATE SERVICE!

1 You get an accurately quoted price and time-required quotation based on hundreds of job studies covering virtually all maintenance needs.

2 You get genuine Cessna parts and factory-trained workmanship.

3 You save money and time and we stand behind every job for your fullest satisfaction.

CHICKEN A LA WING

(Continued from page 29)

ing with Ray's observation about landing strips.

Since Peterson has to feed some 8,000,000 chickens a year, he has established his own feed mill where scientifically prepared formulas are mixed. His broiler production alone is 160,000 per week. Yet his principal business is the White Cornish breed he developed over the past twelve years.

"What is the ultimate in this 'meat' type male?" we asked. "There isn't any," Peterson replied. "We're still improving it. We're doing a lot of experimentation with new strains all the time. We've even gone into the new field of blood typing and have one of the ten experts in the country capable of doing this work. The results may not pay off for many years but constant improvement of the strain is guaranteed. In a few years every commercial chicken produced will be from these new strains."

As we took off from the Crystal Lake strip, circled over the immaculately-clean aluminum and concrete block buildings and saw many more in the process of construction, we couldn't help but think that here was proof positive that the most progressive businessmen in America — the most successful ones — are using private airplanes. Tremendous success has come to Mr. Lloyd Peterson in the past decade — even in a period of the highest taxation in history. And as we headed toward home we also thought: It couldn't happen to a nicer guy.

PACAERO SPEED KIT

(Continued from page 31)

stack for more effective heat.

A new oil cooler exit duct is located on top of the cowl for better oil cooling and drag reduction.

In the No. 2 Kit, two 20,000-BTU Stewart-Warner combustion-type heaters are installed, one in each nacelle. Ground blower fans aid in cooling the aircraft before flight. An electric fuel pump allows ground operation and a thermostatic control is used for cabin heat.

For further drag reduction, the PacAero kit provides improved-type doors for the main landing gear. These are of sturdy, simple design. A very slight change in the angle of incidence of the stabilizer also adds to the kit's completeness.

These modifications accomplish three major improvements — (1) improved as well as higher performance, (2) improved safety factors and (3) lower operating costs. Under performance, PacAero's 20-mph. cruising speed increase for a 9,000-lb. gross weight is figured on the use of 300 hp. at 10,000 ft., for a true air speed close to 220 mph. On our demonstration flight, the airplane was grossing about 8,200 lbs. and trued out at 213 mph. (182 indicated) at 8,000 ft. using 28 inches and 1,800 rpm. for about 270 hp. for each engine with outside air temperature at 64 degrees. At 10,000 ft., with an outside air temperature of 56 degrees, we tried two power settings, as follows: 27 inches and 1,800 rpm. (250 hp. per engine) gave an indicated air speed of 172 and a true air speed of 207 mph., while 27 inches and 2,000 rpm. (about 295 hp.) gave an indicated air speed of 182 and a true air speed of about 220 mph.

Improved performance also includes better engine cooling, better carburetor induction system, better climb, higher critical altitude for take-off and better single-engine performance. These all add up to improved safety factors. They add to the airplane's usefulness and, at 9,000-lb. gross weight, they give it 285 lbs. more payload, which is the equivalent of another passenger and his baggage.

These are ways by which modifications pay for themselves. A 20-mph. increase in cruising speed means about 10% more miles covered — if an unmodified Beech 18 covers 100,000 miles in 500 hrs. of flying per year, the same airplane with the complete modification would cover the same 100,000 miles in 10% fewer hours. This indicates a saving of about 50 hours per year. Operating costs vary among owners but charter rates are generally uniform throughout the country and for the Beech 18 they average about 50 cents per mile or $100 per hour. Based on this, a 50-hr. saving is $5,000. Thus a $10,000 investment in the modification pays for itself in two years or 1,000 hrs. of flying.

PacAero also is marketing a wet-wing conversion for Beech 18's. This makes it possible to carry 100 gals. of additional fuel in each wing outboard of the engines. With this modification, the nose fuel tank is removed, freeing that space for radar, radio or baggage. The new outboard tanks, plus the 78-gal. mains, give the Beech a total of 356 gals. of fuel for a range endurance of more than 8 hours using 270 hp. from each engine for a consumption of 42 gals. per hr. This makes possible a range of more than 1,600 miles at a cruising speed of 200 mph. The wet-wing installation adds less than 25 lbs. to the over-all airplane empty weight, provides a more desirable load the maximum length of the exhaust

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distribution for fuel and eliminates possible nose-fuel hazards.

Price of the wet-wing modification is $7,400 and an exchange deal is offered, with zero time modification, at $7,900. These include installation. PacAero also offers a leading-edge landing light kit at $975 installed.

—T. A.

WILCOX SYSTEM

(Continued from page 33)

we channeled the appropriate localizer frequency, set up the desired runway heading into the Omni-Bearing Indicator and simply flew the airplane by centering the deviation needle.

The Travel Air installation consists of a 700B Glideslope, 701A Series "A" ADF, 702A Marker Beacon Receiver, 703A Computing Automatic Tracker, 705A Communication Receiver, 706A Navigational Receiver with Omni-Bearing Indicator for driving the RMI, 707A Transmitter, 740A Compass System (GE and a 749A Transistorized Speaker Amplifier. This equipment is powered by two 715A Dynamotors. A 100-VA inverter is used to supply power for the ADF and instruments. The right hand glove compartment contains a Narco Mark II Omnigator which came on the Travel Air as standard factory equipment and is used as a number 2 Omni or standby communications.

The instrumentation consists of a Weston 1151 cross-pointer with omni-bearing selector and an RMI in addition to the presentation of the GE compass on the instrument panel. The radio panel as illustrated in the photograph is compact and simple to operate once you are familiar with the equipment. The two communications heads with the switching arrangement will allow the pilot to program his communications from one control area to another, from airways to approach control, from approach control to tower and from tower to ground control merely by setting up the anticipated frequencies and using the switching arrangement. The navigation head includes localizer and glideslope frequency. When the pilot dials the localizer frequency, the appropriate glideslope frequency will automatically channel. The CAT control on the panel consists of an on-off switch and a left-right switch for test purposes.

The 3-light Marker Beacon has a high-low sensitivity control. The ADF is the new Wilcox Series A model which recently was sent out without charge to all owners of the old ADF as a complete replacement. In addition, the edge-lighted panel has three switches to the left (speaker headphone switch, a squelch disable and a single channel-double channel simplex switch).

The installation fits compactly into the nose of the Travel Air and the entire installation weighs 120 pounds. The rack comes wired for the appropriate equipments ordered complete with relays, condensers, etc., and the pendant cable is long enough to reach the plugs on the back of the radio control box in the instrument panel.

We had no trouble getting attention from the busy airline airport we flew into on the demonstration and we understood from Moose that the transmitter had between 30 and 40-watts output. The Canari Communication Receiver and Omni Receiver are the same as used in all of Eastern Air Lines' new aircraft, including the 440, DC-7's and Lockheed Electras.

—G.E.H.

In 1842, William Samuel Henson, an English inventor, made a large scale model utilizing for the first time aerial screws and a horizontal plane structure. The illustration shows how this model might have looked built to full scale and able to fly.

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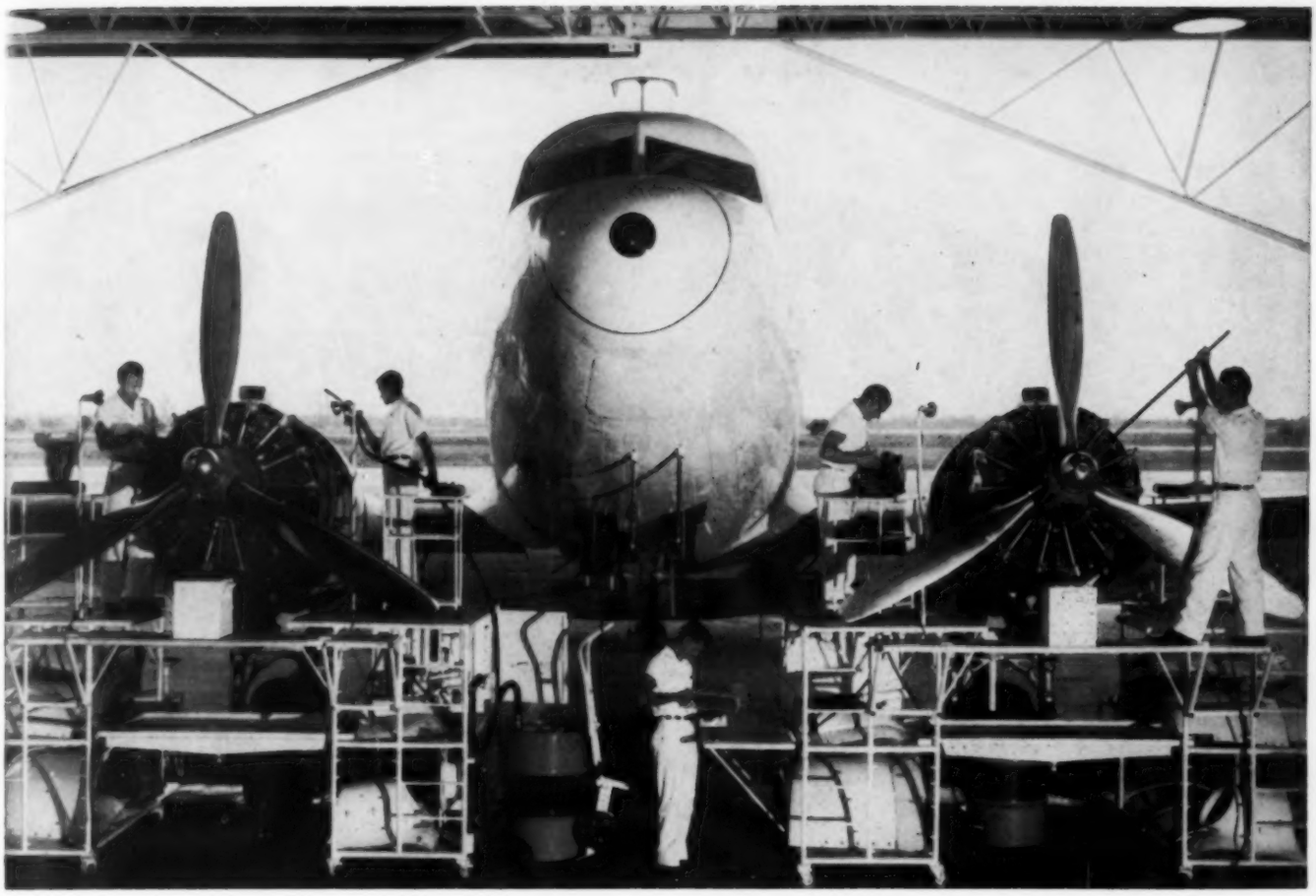

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